

IBE AMARACHI SHEILA
MECHANICAL ENGINEERING
16/ENG06/028
ENG 281

QUESTION 4(A)

commandwindow

clear

clc

a=[0 10 4 -2; -3 -17 1 2; 1 1 1 0; 8 -34 16 -10]

b=[-4; 2; 6; 4]

bby=inv(a)

beu=bby*b

a =

0 10 4 -2

-3 -17 1 2

1 1 1 0

8 -34 16 -10

b =

-4

2

6

4

bby =

-0.1786 -0.1020 0.5714 0.0153

0.0357 -0.0153 0.0357 -0.0102

0.1429 0.1173 0.3929 -0.0051

-0.0357 0.1582 0.9643 -0.0612

beu =

4.0000

-0.0000

2.0000

6.0000

QUESTION 4(B)

commandwindow

clear

clc

close all

syms t

$d = 1.5 \cdot \exp(-0.75 \cdot t) \cdot \sin(0.85 \cdot t) + (0.375 \cdot t)$

tn=[0:0.01:2.5]

dn=subs(d,tn)

v=diff(d)

vn=subs(v,tn)

figure (1)

plot(tn,vn)

xlabel('time(min)')

ylabel('velocity(m/min)')

grid on

grid minor

axis tight

a=diff(v)

an=subs(a,tn)

figure (2)

```
plot(tn,an)
```

```
xlabel('time(min)')
```

```
ylabel('acceleration(m/min^2)')
```

```
grid on
```

```
grid minor
```

```
axis tight
```

figure (3)

```
plot(tn,vn,tn,an)
```

```
xlabel('time(min)')
```

```
ylabel('variable')
```

```
legend('velocity(m/min)','acceleration(m/min^2)','location','best')
```

```
grid on
```

```
grid minor
```

```
axis tight
```

d =

$$(3*t)/8 + (3*\sin((17*t)/20)*\exp(-(3*t)/4))/2$$

tn =

Columns 1 through 12

0	0.0100	0.0200	0.0300	0.0400	0.0500	0.0600	0.0700	0.0800
0.0900	0.1000	0.1100						

Columns 13 through 24

0.1200	0.1300	0.1400	0.1500	0.1600	0.1700	0.1800	0.1900
0.2000	0.2100	0.2200	0.2300				

Columns 25 through 36

0.2400	0.2500	0.2600	0.2700	0.2800	0.2900	0.3000	0.3100
0.3200	0.3300	0.3400	0.3500				

Columns 37 through 48

0.3600	0.3700	0.3800	0.3900	0.4000	0.4100	0.4200	0.4300
0.4400	0.4500	0.4600	0.4700				

Columns 49 through 60

0.4800	0.4900	0.5000	0.5100	0.5200	0.5300	0.5400	0.5500
0.5600	0.5700	0.5800	0.5900				

Columns 61 through 72

0.6000	0.6100	0.6200	0.6300	0.6400	0.6500	0.6600	0.6700
0.6800	0.6900	0.7000	0.7100				

Columns 73 through 84

0.7200	0.7300	0.7400	0.7500	0.7600	0.7700	0.7800	0.7900
0.8000	0.8100	0.8200	0.8300				

Columns 85 through 96

0.8400	0.8500	0.8600	0.8700	0.8800	0.8900	0.9000	0.9100
0.9200	0.9300	0.9400	0.9500				

Columns 97 through 108

0.9600	0.9700	0.9800	0.9900	1.0000	1.0100	1.0200	1.0300
1.0400	1.0500	1.0600	1.0700				

Columns 109 through 120

1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500
1.1600	1.1700	1.1800	1.1900				

Columns 121 through 132

1.2000	1.2100	1.2200	1.2300	1.2400	1.2500	1.2600	1.2700
1.2800	1.2900	1.3000	1.3100				

Columns 133 through 144

1.3200	1.3300	1.3400	1.3500	1.3600	1.3700	1.3800	1.3900
1.4000	1.4100	1.4200	1.4300				

Columns 145 through 156

1.4400	1.4500	1.4600	1.4700	1.4800	1.4900	1.5000	1.5100
1.5200	1.5300	1.5400	1.5500				

Columns 157 through 168

1.5600	1.5700	1.5800	1.5900	1.6000	1.6100	1.6200	1.6300
1.6400	1.6500	1.6600	1.6700				

Columns 169 through 180

1.6800	1.6900	1.7000	1.7100	1.7200	1.7300	1.7400	1.7500
1.7600	1.7700	1.7800	1.7900				

Columns 181 through 192

1.8000	1.8100	1.8200	1.8300	1.8400	1.8500	1.8600	1.8700
1.8800	1.8900	1.9000	1.9100				

Columns 193 through 204

1.9200	1.9300	1.9400	1.9500	1.9600	1.9700	1.9800	1.9900
2.0000	2.0100	2.0200	2.0300				

Columns 205 through 216

2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1100
2.1200	2.1300	2.1400	2.1500				

Columns 217 through 228

2.1600	2.1700	2.1800	2.1900	2.2000	2.2100	2.2200	2.2300
2.2400	2.2500	2.2600	2.2700				

Columns 229 through 240

2.2800 2.2900 2.3000 2.3100 2.3200 2.3300 2.3400 2.3500
2.3600 2.3700 2.3800 2.3900

Columns 241 through 251

2.4000 2.4100 2.4200 2.4300 2.4400 2.4500 2.4600 2.4700
2.4800 2.4900 2.5000

dn =

[0, (3*exp(-3/400)*sin(17/2000))/2 + 3/800, (3*exp(-3/200)*sin(17/1000))/2 +
3/400, (3*exp(-9/400)*sin(51/2000))/2 + 9/800, (3*exp(-3/100)*sin(17/500))/2 +
3/200, (3*exp(-3/80)*sin(17/400))/2 + 3/160, (3*exp(-9/200)*sin(51/1000))/2 +
9/400, (3*exp(-21/400)*sin(119/2000))/2 + 21/800, (3*exp(-3/50)*sin(17/250))/2
+ 3/100, (3*exp(-27/400)*sin(153/2000))/2 + 27/800, (3*exp(-
3/40)*sin(17/200))/2 + 3/80, (3*exp(-33/400)*sin(187/2000))/2 + 33/800, (3*exp(-
9/100)*sin(51/500))/2 + 9/200, (3*exp(-39/400)*sin(221/2000))/2 + 39/800,
(3*exp(-21/200)*sin(119/1000))/2 + 21/400, (3*exp(-9/80)*sin(51/400))/2 +
9/160, (3*exp(-3/25)*sin(17/125))/2 + 3/50, (3*exp(-51/400)*sin(289/2000))/2 +
51/800, (3*exp(-27/200)*sin(153/1000))/2 + 27/400, (3*exp(-
57/400)*sin(323/2000))/2 + 57/800, (3*exp(-3/20)*sin(17/100))/2 + 3/40, (3*exp(-
63/400)*sin(357/2000))/2 + 63/800, (3*exp(-33/200)*sin(187/1000))/2 + 33/400,
(3*exp(-69/400)*sin(391/2000))/2 + 69/800, (3*exp(-9/50)*sin(51/250))/2 +
9/100, (3*exp(-3/16)*sin(17/80))/2 + 3/32, (3*exp(-39/200)*sin(221/1000))/2 +
39/400, (3*exp(-81/400)*sin(459/2000))/2 + 81/800, (3*exp(-

$21/100) \cdot \sin(119/500))/2 + 21/200, (3 \cdot \exp(-87/400) \cdot \sin(493/2000))/2 + 87/800,$
 $(3 \cdot \exp(-9/40) \cdot \sin(51/200))/2 + 9/80, (3 \cdot \exp(-93/400) \cdot \sin(527/2000))/2 + 93/800,$
 $(3 \cdot \exp(-6/25) \cdot \sin(34/125))/2 + 3/25, (3 \cdot \exp(-99/400) \cdot \sin(561/2000))/2 + 99/800,$
 $(3 \cdot \exp(-51/200) \cdot \sin(289/1000))/2 + 51/400, (3 \cdot \exp(-21/80) \cdot \sin(119/400))/2 +$
 $21/160, (3 \cdot \exp(-27/100) \cdot \sin(153/500))/2 + 27/200, (3 \cdot \exp(-$
 $111/400) \cdot \sin(629/2000))/2 + 111/800, (3 \cdot \exp(-57/200) \cdot \sin(323/1000))/2 +$
 $57/400, (3 \cdot \exp(-117/400) \cdot \sin(663/2000))/2 + 117/800, (3 \cdot \exp(-$
 $3/10) \cdot \sin(17/50))/2 + 3/20, (3 \cdot \exp(-123/400) \cdot \sin(697/2000))/2 + 123/800,$
 $(3 \cdot \exp(-63/200) \cdot \sin(357/1000))/2 + 63/400, (3 \cdot \exp(-129/400) \cdot \sin(731/2000))/2 +$
 $129/800, (3 \cdot \exp(-33/100) \cdot \sin(187/500))/2 + 33/200, (3 \cdot \exp(-$
 $27/80) \cdot \sin(153/400))/2 + 27/160, (3 \cdot \exp(-69/200) \cdot \sin(391/1000))/2 + 69/400,$
 $(3 \cdot \exp(-141/400) \cdot \sin(799/2000))/2 + 141/800, (3 \cdot \exp(-9/25) \cdot \sin(51/125))/2 +$
 $9/50, (3 \cdot \exp(-147/400) \cdot \sin(833/2000))/2 + 147/800, (3 \cdot \exp(-3/8) \cdot \sin(17/40))/2 +$
 $3/16, (3 \cdot \exp(-153/400) \cdot \sin(867/2000))/2 + 153/800, (3 \cdot \exp(-$
 $39/100) \cdot \sin(221/500))/2 + 39/200, (3 \cdot \exp(-159/400) \cdot \sin(901/2000))/2 + 159/800,$
 $(3 \cdot \exp(-81/200) \cdot \sin(459/1000))/2 + 81/400, (3 \cdot \exp(-33/80) \cdot \sin(187/400))/2 +$
 $33/160, (3 \cdot \exp(-21/50) \cdot \sin(119/250))/2 + 21/100, (3 \cdot \exp(-$
 $171/400) \cdot \sin(969/2000))/2 + 171/800, (3 \cdot \exp(-87/200) \cdot \sin(493/1000))/2 +$
 $87/400, (3 \cdot \exp(-177/400) \cdot \sin(1003/2000))/2 + 177/800, (3 \cdot \exp(-$
 $9/20) \cdot \sin(51/100))/2 + 9/40, (3 \cdot \exp(-183/400) \cdot \sin(1037/2000))/2 + 183/800,$
 $(3 \cdot \exp(-93/200) \cdot \sin(527/1000))/2 + 93/400, (3 \cdot \exp(-189/400) \cdot \sin(1071/2000))/2$
 $+ 189/800, (3 \cdot \exp(-12/25) \cdot \sin(68/125))/2 + 6/25, (3 \cdot \exp(-39/80) \cdot \sin(221/400))/2$
 $+ 39/160, (3 \cdot \exp(-99/200) \cdot \sin(561/1000))/2 + 99/400, (3 \cdot \exp(-$
 $201/400) \cdot \sin(1139/2000))/2 + 201/800, (3 \cdot \exp(-51/100) \cdot \sin(289/500))/2 +$
 $51/200, (3 \cdot \exp(-207/400) \cdot \sin(1173/2000))/2 + 207/800, (3 \cdot \exp(-$
 $21/40) \cdot \sin(119/200))/2 + 21/80, (3 \cdot \exp(-213/400) \cdot \sin(1207/2000))/2 + 213/800,$
 $(3 \cdot \exp(-27/50) \cdot \sin(153/250))/2 + 27/100, (3 \cdot \exp(-219/400) \cdot \sin(1241/2000))/2 +$
 $219/800, (3 \cdot \exp(-111/200) \cdot \sin(629/1000))/2 + 111/400, (3 \cdot \exp(-$
 $9/16) \cdot \sin(51/80))/2 + 9/32, (3 \cdot \exp(-57/100) \cdot \sin(323/500))/2 + 57/200, (3 \cdot \exp(-$
 $231/400) \cdot \sin(1309/2000))/2 + 231/800, (3 \cdot \exp(-117/200) \cdot \sin(663/1000))/2 +$
 $117/400, (3 \cdot \exp(-237/400) \cdot \sin(1343/2000))/2 + 237/800, (3 \cdot \exp(-$
 $3/5) \cdot \sin(17/25))/2 + 3/10, (3 \cdot \exp(-243/400) \cdot \sin(1377/2000))/2 + 243/800,$
 $(3 \cdot \exp(-123/200) \cdot \sin(697/1000))/2 + 123/400, (3 \cdot \exp(-$
 $249/400) \cdot \sin(1411/2000))/2 + 249/800, (3 \cdot \exp(-63/100) \cdot \sin(357/500))/2 +$
 $63/200, (3 \cdot \exp(-51/80) \cdot \sin(289/400))/2 + 51/160, (3 \cdot \exp(-$

$129/200) * \sin(731/1000))/2 + 129/400, (3 * \exp(-261/400) * \sin(1479/2000))/2 +$
 $261/800, (3 * \exp(-33/50) * \sin(187/250))/2 + 33/100, (3 * \exp(-$
 $267/400) * \sin(1513/2000))/2 + 267/800, (3 * \exp(-27/40) * \sin(153/200))/2 + 27/80,$
 $(3 * \exp(-273/400) * \sin(1547/2000))/2 + 273/800, (3 * \exp(-69/100) * \sin(391/500))/2$
 $+ 69/200, (3 * \exp(-279/400) * \sin(1581/2000))/2 + 279/800, (3 * \exp(-$
 $141/200) * \sin(799/1000))/2 + 141/400, (3 * \exp(-57/80) * \sin(323/400))/2 + 57/160,$
 $(3 * \exp(-18/25) * \sin(102/125))/2 + 9/25, (3 * \exp(-291/400) * \sin(1649/2000))/2 +$
 $291/800, (3 * \exp(-147/200) * \sin(833/1000))/2 + 147/400, (3 * \exp(-$
 $297/400) * \sin(1683/2000))/2 + 297/800, (3 * \exp(-3/4) * \sin(17/20))/2 + 3/8, (3 * \exp(-$
 $303/400) * \sin(1717/2000))/2 + 303/800, (3 * \exp(-153/200) * \sin(867/1000))/2 +$
 $153/400, (3 * \exp(-309/400) * \sin(1751/2000))/2 + 309/800, (3 * \exp(-$
 $39/50) * \sin(221/250))/2 + 39/100, (3 * \exp(-63/80) * \sin(357/400))/2 + 63/160,$
 $(3 * \exp(-159/200) * \sin(901/1000))/2 + 159/400, (3 * \exp(-$
 $321/400) * \sin(1819/2000))/2 + 321/800, (3 * \exp(-81/100) * \sin(459/500))/2 +$
 $81/200, (3 * \exp(-327/400) * \sin(1853/2000))/2 + 327/800, (3 * \exp(-$
 $33/40) * \sin(187/200))/2 + 33/80, (3 * \exp(-333/400) * \sin(1887/2000))/2 + 333/800,$
 $(3 * \exp(-21/25) * \sin(119/125))/2 + 21/50, (3 * \exp(-339/400) * \sin(1921/2000))/2 +$
 $339/800, (3 * \exp(-171/200) * \sin(969/1000))/2 + 171/400, (3 * \exp(-$
 $69/80) * \sin(391/400))/2 + 69/160, (3 * \exp(-87/100) * \sin(493/500))/2 + 87/200,$
 $(3 * \exp(-351/400) * \sin(1989/2000))/2 + 351/800, (3 * \exp(-$
 $177/200) * \sin(1003/1000))/2 + 177/400, (3 * \exp(-357/400) * \sin(2023/2000))/2 +$
 $357/800, (3 * \exp(-9/10) * \sin(51/50))/2 + 9/20, (3 * \exp(-363/400) * \sin(2057/2000))/2$
 $+ 363/800, (3 * \exp(-183/200) * \sin(1037/1000))/2 + 183/400, (3 * \exp(-$
 $369/400) * \sin(2091/2000))/2 + 369/800, (3 * \exp(-93/100) * \sin(527/500))/2 +$
 $93/200, (3 * \exp(-15/16) * \sin(17/16))/2 + 15/32, (3 * \exp(-$
 $189/200) * \sin(1071/1000))/2 + 189/400, (3 * \exp(-381/400) * \sin(2159/2000))/2 +$
 $381/800, (3 * \exp(-24/25) * \sin(136/125))/2 + 12/25, (3 * \exp(-$
 $387/400) * \sin(2193/2000))/2 + 387/800, (3 * \exp(-39/40) * \sin(221/200))/2 + 39/80,$
 $(3 * \exp(-393/400) * \sin(2227/2000))/2 + 393/800, (3 * \exp(-99/100) * \sin(561/500))/2$
 $+ 99/200, (3 * \exp(-399/400) * \sin(2261/2000))/2 + 399/800, (3 * \exp(-$
 $201/200) * \sin(1139/1000))/2 + 201/400, (3 * \exp(-81/80) * \sin(459/400))/2 + 81/160,$
 $(3 * \exp(-51/50) * \sin(289/250))/2 + 51/100, (3 * \exp(-411/400) * \sin(2329/2000))/2 +$
 $411/800, (3 * \exp(-207/200) * \sin(1173/1000))/2 + 207/400, (3 * \exp(-$
 $417/400) * \sin(2363/2000))/2 + 417/800, (3 * \exp(-21/20) * \sin(119/100))/2 + 21/40,$
 $(3 * \exp(-423/400) * \sin(2397/2000))/2 + 423/800, (3 * \exp(-$

$213/200) * \sin(1207/1000))/2 + 213/400, (3 * \exp(-429/400) * \sin(2431/2000))/2 +$
 $429/800, (3 * \exp(-27/25) * \sin(153/125))/2 + 27/50, (3 * \exp(-87/80) * \sin(493/400))/2$
 $+ 87/160, (3 * \exp(-219/200) * \sin(1241/1000))/2 + 219/400, (3 * \exp(-$
 $441/400) * \sin(2499/2000))/2 + 441/800, (3 * \exp(-111/100) * \sin(629/500))/2 +$
 $111/200, (3 * \exp(-447/400) * \sin(2533/2000))/2 + 447/800, (3 * \exp(-$
 $9/8) * \sin(51/40))/2 + 9/16, (3 * \exp(-453/400) * \sin(2567/2000))/2 + 453/800,$
 $(3 * \exp(-57/50) * \sin(323/250))/2 + 57/100, (3 * \exp(-459/400) * \sin(2601/2000))/2 +$
 $459/800, (3 * \exp(-231/200) * \sin(1309/1000))/2 + 231/400, (3 * \exp(-$
 $93/80) * \sin(527/400))/2 + 93/160, (3 * \exp(-117/100) * \sin(663/500))/2 + 117/200,$
 $(3 * \exp(-471/400) * \sin(2669/2000))/2 + 471/800, (3 * \exp(-$
 $237/200) * \sin(1343/1000))/2 + 237/400, (3 * \exp(-477/400) * \sin(2703/2000))/2 +$
 $477/800, (3 * \exp(-6/5) * \sin(34/25))/2 + 3/5, (3 * \exp(-483/400) * \sin(2737/2000))/2 +$
 $483/800, (3 * \exp(-243/200) * \sin(1377/1000))/2 + 243/400, (3 * \exp(-$
 $489/400) * \sin(2771/2000))/2 + 489/800, (3 * \exp(-123/100) * \sin(697/500))/2 +$
 $123/200, (3 * \exp(-99/80) * \sin(561/400))/2 + 99/160, (3 * \exp(-$
 $249/200) * \sin(1411/1000))/2 + 249/400, (3 * \exp(-501/400) * \sin(2839/2000))/2 +$
 $501/800, (3 * \exp(-63/50) * \sin(357/250))/2 + 63/100, (3 * \exp(-$
 $507/400) * \sin(2873/2000))/2 + 507/800, (3 * \exp(-51/40) * \sin(289/200))/2 + 51/80,$
 $(3 * \exp(-513/400) * \sin(2907/2000))/2 + 513/800, (3 * \exp(-129/100) * \sin(731/500))/2$
 $+ 129/200, (3 * \exp(-519/400) * \sin(2941/2000))/2 + 519/800, (3 * \exp(-$
 $261/200) * \sin(1479/1000))/2 + 261/400, (3 * \exp(-21/16) * \sin(119/80))/2 + 21/32,$
 $(3 * \exp(-33/25) * \sin(187/125))/2 + 33/50, (3 * \exp(-531/400) * \sin(3009/2000))/2 +$
 $531/800, (3 * \exp(-267/200) * \sin(1513/1000))/2 + 267/400, (3 * \exp(-$
 $537/400) * \sin(3043/2000))/2 + 537/800, (3 * \exp(-27/20) * \sin(153/100))/2 + 27/40,$
 $(3 * \exp(-543/400) * \sin(3077/2000))/2 + 543/800, (3 * \exp(-$
 $273/200) * \sin(1547/1000))/2 + 273/400, (3 * \exp(-549/400) * \sin(3111/2000))/2 +$
 $549/800, (3 * \exp(-69/50) * \sin(391/250))/2 + 69/100, (3 * \exp(-$
 $111/80) * \sin(629/400))/2 + 111/160, (3 * \exp(-279/200) * \sin(1581/1000))/2 +$
 $279/400, (3 * \exp(-561/400) * \sin(3179/2000))/2 + 561/800, (3 * \exp(-$
 $141/100) * \sin(799/500))/2 + 141/200, (3 * \exp(-567/400) * \sin(3213/2000))/2 +$
 $567/800, (3 * \exp(-57/40) * \sin(323/200))/2 + 57/80, (3 * \exp(-$
 $573/400) * \sin(3247/2000))/2 + 573/800, (3 * \exp(-36/25) * \sin(204/125))/2 + 18/25,$
 $(3 * \exp(-579/400) * \sin(3281/2000))/2 + 579/800, (3 * \exp(-$
 $291/200) * \sin(1649/1000))/2 + 291/400, (3 * \exp(-117/80) * \sin(663/400))/2 +$
 $117/160, (3 * \exp(-147/100) * \sin(833/500))/2 + 147/200, (3 * \exp(-$

$591/400) * \sin(3349/2000))/2 + 591/800, (3 * \exp(-297/200) * \sin(1683/1000))/2 +$
 $297/400, (3 * \exp(-597/400) * \sin(3383/2000))/2 + 597/800, (3 * \exp(-$
 $3/2) * \sin(17/10))/2 + 3/4, (3 * \exp(-603/400) * \sin(3417/2000))/2 + 603/800, (3 * \exp(-$
 $303/200) * \sin(1717/1000))/2 + 303/400, (3 * \exp(-609/400) * \sin(3451/2000))/2 +$
 $609/800, (3 * \exp(-153/100) * \sin(867/500))/2 + 153/200, (3 * \exp(-$
 $123/80) * \sin(697/400))/2 + 123/160, (3 * \exp(-309/200) * \sin(1751/1000))/2 +$
 $309/400, (3 * \exp(-621/400) * \sin(3519/2000))/2 + 621/800, (3 * \exp(-$
 $39/25) * \sin(221/125))/2 + 39/50, (3 * \exp(-627/400) * \sin(3553/2000))/2 + 627/800,$
 $(3 * \exp(-63/40) * \sin(357/200))/2 + 63/80, (3 * \exp(-633/400) * \sin(3587/2000))/2 +$
 $633/800, (3 * \exp(-159/100) * \sin(901/500))/2 + 159/200, (3 * \exp(-$
 $639/400) * \sin(3621/2000))/2 + 639/800, (3 * \exp(-321/200) * \sin(1819/1000))/2 +$
 $321/400, (3 * \exp(-129/80) * \sin(731/400))/2 + 129/160, (3 * \exp(-$
 $81/50) * \sin(459/250))/2 + 81/100, (3 * \exp(-651/400) * \sin(3689/2000))/2 + 651/800,$
 $(3 * \exp(-327/200) * \sin(1853/1000))/2 + 327/400, (3 * \exp(-$
 $657/400) * \sin(3723/2000))/2 + 657/800, (3 * \exp(-33/20) * \sin(187/100))/2 + 33/40,$
 $(3 * \exp(-663/400) * \sin(3757/2000))/2 + 663/800, (3 * \exp(-$
 $333/200) * \sin(1887/1000))/2 + 333/400, (3 * \exp(-669/400) * \sin(3791/2000))/2 +$
 $669/800, (3 * \exp(-42/25) * \sin(238/125))/2 + 21/25, (3 * \exp(-27/16) * \sin(153/80))/2$
 $+ 27/32, (3 * \exp(-339/200) * \sin(1921/1000))/2 + 339/400, (3 * \exp(-$
 $681/400) * \sin(3859/2000))/2 + 681/800, (3 * \exp(-171/100) * \sin(969/500))/2 +$
 $171/200, (3 * \exp(-687/400) * \sin(3893/2000))/2 + 687/800, (3 * \exp(-$
 $69/40) * \sin(391/200))/2 + 69/80, (3 * \exp(-693/400) * \sin(3927/2000))/2 + 693/800,$
 $(3 * \exp(-87/50) * \sin(493/250))/2 + 87/100, (3 * \exp(-699/400) * \sin(3961/2000))/2 +$
 $699/800, (3 * \exp(-351/200) * \sin(1989/1000))/2 + 351/400, (3 * \exp(-$
 $141/80) * \sin(799/400))/2 + 141/160, (3 * \exp(-177/100) * \sin(1003/500))/2 +$
 $177/200, (3 * \exp(-711/400) * \sin(4029/2000))/2 + 711/800, (3 * \exp(-$
 $357/200) * \sin(2023/1000))/2 + 357/400, (3 * \exp(-717/400) * \sin(4063/2000))/2 +$
 $717/800, (3 * \exp(-9/5) * \sin(51/25))/2 + 9/10, (3 * \exp(-723/400) * \sin(4097/2000))/2$
 $+ 723/800, (3 * \exp(-363/200) * \sin(2057/1000))/2 + 363/400, (3 * \exp(-$
 $729/400) * \sin(4131/2000))/2 + 729/800, (3 * \exp(-183/100) * \sin(1037/500))/2 +$
 $183/200, (3 * \exp(-147/80) * \sin(833/400))/2 + 147/160, (3 * \exp(-$
 $369/200) * \sin(2091/1000))/2 + 369/400, (3 * \exp(-741/400) * \sin(4199/2000))/2 +$
 $741/800, (3 * \exp(-93/50) * \sin(527/250))/2 + 93/100, (3 * \exp(-$
 $747/400) * \sin(4233/2000))/2 + 747/800, (3 * \exp(-15/8) * \sin(17/8))/2 + 15/16]$

v =

$$(51*\cos((17*t)/20)*\exp(-(3*t)/4))/40 - (9*\sin((17*t)/20)*\exp(-(3*t)/4))/8 + 3/8$$

vn =

$$\begin{aligned} & [33/20, (51*\cos(17/2000)*\exp(-3/400))/40 - (9*\exp(-3/400)*\sin(17/2000))/8 + \\ & 3/8, (51*\cos(17/1000)*\exp(-3/200))/40 - (9*\exp(-3/200)*\sin(17/1000))/8 + 3/8, \\ & (51*\cos(51/2000)*\exp(-9/400))/40 - (9*\exp(-9/400)*\sin(51/2000))/8 + 3/8, \\ & (51*\cos(17/500)*\exp(-3/100))/40 - (9*\exp(-3/100)*\sin(17/500))/8 + 3/8, \\ & (51*\cos(17/400)*\exp(-3/80))/40 - (9*\exp(-3/80)*\sin(17/400))/8 + 3/8, \\ & (51*\cos(51/1000)*\exp(-9/200))/40 - (9*\exp(-9/200)*\sin(51/1000))/8 + 3/8, \\ & (51*\cos(119/2000)*\exp(-21/400))/40 - (9*\exp(-21/400)*\sin(119/2000))/8 + 3/8, \\ & (51*\cos(17/250)*\exp(-3/50))/40 - (9*\exp(-3/50)*\sin(17/250))/8 + 3/8, \\ & (51*\cos(153/2000)*\exp(-27/400))/40 - (9*\exp(-27/400)*\sin(153/2000))/8 + 3/8, \\ & (51*\cos(17/200)*\exp(-3/40))/40 - (9*\exp(-3/40)*\sin(17/200))/8 + 3/8, \\ & (51*\cos(187/2000)*\exp(-33/400))/40 - (9*\exp(-33/400)*\sin(187/2000))/8 + 3/8, \\ & (51*\cos(51/500)*\exp(-9/100))/40 - (9*\exp(-9/100)*\sin(51/500))/8 + 3/8, \\ & (51*\cos(221/2000)*\exp(-39/400))/40 - (9*\exp(-39/400)*\sin(221/2000))/8 + 3/8, \\ & (51*\cos(119/1000)*\exp(-21/200))/40 - (9*\exp(-21/200)*\sin(119/1000))/8 + 3/8, \\ & (51*\cos(51/400)*\exp(-9/80))/40 - (9*\exp(-9/80)*\sin(51/400))/8 + 3/8, \\ & (51*\cos(17/125)*\exp(-3/25))/40 - (9*\exp(-3/25)*\sin(17/125))/8 + 3/8, \\ & (51*\cos(289/2000)*\exp(-51/400))/40 - (9*\exp(-51/400)*\sin(289/2000))/8 + 3/8, \\ & (51*\cos(153/1000)*\exp(-27/200))/40 - (9*\exp(-27/200)*\sin(153/1000))/8 + 3/8, \\ & (51*\cos(323/2000)*\exp(-57/400))/40 - (9*\exp(-57/400)*\sin(323/2000))/8 + 3/8, \\ & (51*\cos(17/100)*\exp(-3/20))/40 - (9*\exp(-3/20)*\sin(17/100))/8 + 3/8, \\ & (51*\cos(357/2000)*\exp(-63/400))/40 - (9*\exp(-63/400)*\sin(357/2000))/8 + 3/8, \\ & (51*\cos(187/1000)*\exp(-33/200))/40 - (9*\exp(-33/200)*\sin(187/1000))/8 + 3/8, \end{aligned}$$

$(51 \cdot \cos(391/2000) \cdot \exp(-69/400))/40 - (9 \cdot \exp(-69/400) \cdot \sin(391/2000))/8 + 3/8,$
 $(51 \cdot \cos(51/250) \cdot \exp(-9/50))/40 - (9 \cdot \exp(-9/50) \cdot \sin(51/250))/8 + 3/8,$
 $(51 \cdot \cos(17/80) \cdot \exp(-3/16))/40 - (9 \cdot \exp(-3/16) \cdot \sin(17/80))/8 + 3/8,$
 $(51 \cdot \cos(221/1000) \cdot \exp(-39/200))/40 - (9 \cdot \exp(-39/200) \cdot \sin(221/1000))/8 + 3/8,$
 $(51 \cdot \cos(459/2000) \cdot \exp(-81/400))/40 - (9 \cdot \exp(-81/400) \cdot \sin(459/2000))/8 + 3/8,$
 $(51 \cdot \cos(119/500) \cdot \exp(-21/100))/40 - (9 \cdot \exp(-21/100) \cdot \sin(119/500))/8 + 3/8,$
 $(51 \cdot \cos(493/2000) \cdot \exp(-87/400))/40 - (9 \cdot \exp(-87/400) \cdot \sin(493/2000))/8 + 3/8,$
 $(51 \cdot \cos(51/200) \cdot \exp(-9/40))/40 - (9 \cdot \exp(-9/40) \cdot \sin(51/200))/8 + 3/8,$
 $(51 \cdot \cos(527/2000) \cdot \exp(-93/400))/40 - (9 \cdot \exp(-93/400) \cdot \sin(527/2000))/8 + 3/8,$
 $(51 \cdot \cos(34/125) \cdot \exp(-6/25))/40 - (9 \cdot \exp(-6/25) \cdot \sin(34/125))/8 + 3/8,$
 $(51 \cdot \cos(561/2000) \cdot \exp(-99/400))/40 - (9 \cdot \exp(-99/400) \cdot \sin(561/2000))/8 + 3/8,$
 $(51 \cdot \cos(289/1000) \cdot \exp(-51/200))/40 - (9 \cdot \exp(-51/200) \cdot \sin(289/1000))/8 + 3/8,$
 $(51 \cdot \cos(119/400) \cdot \exp(-21/80))/40 - (9 \cdot \exp(-21/80) \cdot \sin(119/400))/8 + 3/8,$
 $(51 \cdot \cos(153/500) \cdot \exp(-27/100))/40 - (9 \cdot \exp(-27/100) \cdot \sin(153/500))/8 + 3/8,$
 $(51 \cdot \cos(629/2000) \cdot \exp(-111/400))/40 - (9 \cdot \exp(-111/400) \cdot \sin(629/2000))/8 + 3/8,$
 $(51 \cdot \cos(323/1000) \cdot \exp(-57/200))/40 - (9 \cdot \exp(-57/200) \cdot \sin(323/1000))/8 + 3/8,$
 $(51 \cdot \cos(663/2000) \cdot \exp(-117/400))/40 - (9 \cdot \exp(-117/400) \cdot \sin(663/2000))/8 + 3/8,$
 $(51 \cdot \cos(17/50) \cdot \exp(-3/10))/40 - (9 \cdot \exp(-3/10) \cdot \sin(17/50))/8 + 3/8,$
 $(51 \cdot \cos(697/2000) \cdot \exp(-123/400))/40 - (9 \cdot \exp(-123/400) \cdot \sin(697/2000))/8 + 3/8,$
 $(51 \cdot \cos(357/1000) \cdot \exp(-63/200))/40 - (9 \cdot \exp(-63/200) \cdot \sin(357/1000))/8 + 3/8,$
 $(51 \cdot \cos(731/2000) \cdot \exp(-129/400))/40 - (9 \cdot \exp(-129/400) \cdot \sin(731/2000))/8 + 3/8,$
 $(51 \cdot \cos(187/500) \cdot \exp(-33/100))/40 - (9 \cdot \exp(-33/100) \cdot \sin(187/500))/8 + 3/8,$
 $(51 \cdot \cos(153/400) \cdot \exp(-27/80))/40 - (9 \cdot \exp(-27/80) \cdot \sin(153/400))/8 + 3/8,$
 $(51 \cdot \cos(391/1000) \cdot \exp(-69/200))/40 - (9 \cdot \exp(-69/200) \cdot \sin(391/1000))/8 + 3/8,$
 $(51 \cdot \cos(799/2000) \cdot \exp(-141/400))/40 - (9 \cdot \exp(-141/400) \cdot \sin(799/2000))/8 + 3/8,$
 $(51 \cdot \cos(51/125) \cdot \exp(-9/25))/40 - (9 \cdot \exp(-9/25) \cdot \sin(51/125))/8 + 3/8,$
 $(51 \cdot \cos(833/2000) \cdot \exp(-147/400))/40 - (9 \cdot \exp(-147/400) \cdot \sin(833/2000))/8 + 3/8,$
 $(51 \cdot \cos(17/40) \cdot \exp(-3/8))/40 - (9 \cdot \exp(-3/8) \cdot \sin(17/40))/8 + 3/8,$
 $(51 \cdot \cos(867/2000) \cdot \exp(-153/400))/40 - (9 \cdot \exp(-153/400) \cdot \sin(867/2000))/8 + 3/8,$
 $(51 \cdot \cos(221/500) \cdot \exp(-39/100))/40 - (9 \cdot \exp(-39/100) \cdot \sin(221/500))/8 + 3/8,$
 $(51 \cdot \cos(901/2000) \cdot \exp(-159/400))/40 - (9 \cdot \exp(-159/400) \cdot \sin(901/2000))/8 + 3/8,$
 $(51 \cdot \cos(459/1000) \cdot \exp(-81/200))/40 - (9 \cdot \exp(-81/200) \cdot \sin(459/1000))/8 + 3/8,$
 $(51 \cdot \cos(187/400) \cdot \exp(-33/80))/40 - (9 \cdot \exp(-33/80) \cdot \sin(187/400))/8 + 3/8,$
 $(51 \cdot \cos(119/250) \cdot \exp(-21/50))/40 - (9 \cdot \exp(-21/50) \cdot \sin(119/250))/8 + 3/8,$
 $(51 \cdot \cos(969/2000) \cdot \exp(-171/400))/40 - (9 \cdot \exp(-171/400) \cdot \sin(969/2000))/8 + 3/8,$

$(51 \cdot \cos(493/1000) \cdot \exp(-87/200))/40 - (9 \cdot \exp(-87/200) \cdot \sin(493/1000))/8 + 3/8,$
 $(51 \cdot \cos(1003/2000) \cdot \exp(-177/400))/40 - (9 \cdot \exp(-177/400) \cdot \sin(1003/2000))/8 +$
 $3/8, (51 \cdot \cos(51/100) \cdot \exp(-9/20))/40 - (9 \cdot \exp(-9/20) \cdot \sin(51/100))/8 + 3/8,$
 $(51 \cdot \cos(1037/2000) \cdot \exp(-183/400))/40 - (9 \cdot \exp(-183/400) \cdot \sin(1037/2000))/8 +$
 $3/8, (51 \cdot \cos(527/1000) \cdot \exp(-93/200))/40 - (9 \cdot \exp(-93/200) \cdot \sin(527/1000))/8 +$
 $3/8, (51 \cdot \cos(1071/2000) \cdot \exp(-189/400))/40 - (9 \cdot \exp(-189/400) \cdot \sin(1071/2000))/8$
 $+ 3/8, (51 \cdot \cos(68/125) \cdot \exp(-12/25))/40 - (9 \cdot \exp(-12/25) \cdot \sin(68/125))/8 + 3/8,$
 $(51 \cdot \cos(221/400) \cdot \exp(-39/80))/40 - (9 \cdot \exp(-39/80) \cdot \sin(221/400))/8 + 3/8,$
 $(51 \cdot \cos(561/1000) \cdot \exp(-99/200))/40 - (9 \cdot \exp(-99/200) \cdot \sin(561/1000))/8 + 3/8,$
 $(51 \cdot \cos(1139/2000) \cdot \exp(-201/400))/40 - (9 \cdot \exp(-201/400) \cdot \sin(1139/2000))/8 +$
 $3/8, (51 \cdot \cos(289/500) \cdot \exp(-51/100))/40 - (9 \cdot \exp(-51/100) \cdot \sin(289/500))/8 + 3/8,$
 $(51 \cdot \cos(1173/2000) \cdot \exp(-207/400))/40 - (9 \cdot \exp(-207/400) \cdot \sin(1173/2000))/8 +$
 $3/8, (51 \cdot \cos(119/200) \cdot \exp(-21/40))/40 - (9 \cdot \exp(-21/40) \cdot \sin(119/200))/8 + 3/8,$
 $(51 \cdot \cos(1207/2000) \cdot \exp(-213/400))/40 - (9 \cdot \exp(-213/400) \cdot \sin(1207/2000))/8 +$
 $3/8, (51 \cdot \cos(153/250) \cdot \exp(-27/50))/40 - (9 \cdot \exp(-27/50) \cdot \sin(153/250))/8 + 3/8,$
 $(51 \cdot \cos(1241/2000) \cdot \exp(-219/400))/40 - (9 \cdot \exp(-219/400) \cdot \sin(1241/2000))/8 +$
 $3/8, (51 \cdot \cos(629/1000) \cdot \exp(-111/200))/40 - (9 \cdot \exp(-111/200) \cdot \sin(629/1000))/8 +$
 $3/8, (51 \cdot \cos(51/80) \cdot \exp(-9/16))/40 - (9 \cdot \exp(-9/16) \cdot \sin(51/80))/8 + 3/8,$
 $(51 \cdot \cos(323/500) \cdot \exp(-57/100))/40 - (9 \cdot \exp(-57/100) \cdot \sin(323/500))/8 + 3/8,$
 $(51 \cdot \cos(1309/2000) \cdot \exp(-231/400))/40 - (9 \cdot \exp(-231/400) \cdot \sin(1309/2000))/8 +$
 $3/8, (51 \cdot \cos(663/1000) \cdot \exp(-117/200))/40 - (9 \cdot \exp(-117/200) \cdot \sin(663/1000))/8 +$
 $3/8, (51 \cdot \cos(1343/2000) \cdot \exp(-237/400))/40 - (9 \cdot \exp(-237/400) \cdot \sin(1343/2000))/8$
 $+ 3/8, (51 \cdot \cos(17/25) \cdot \exp(-3/5))/40 - (9 \cdot \exp(-3/5) \cdot \sin(17/25))/8 + 3/8,$
 $(51 \cdot \cos(1377/2000) \cdot \exp(-243/400))/40 - (9 \cdot \exp(-243/400) \cdot \sin(1377/2000))/8 +$
 $3/8, (51 \cdot \cos(697/1000) \cdot \exp(-123/200))/40 - (9 \cdot \exp(-123/200) \cdot \sin(697/1000))/8 +$
 $3/8, (51 \cdot \cos(1411/2000) \cdot \exp(-249/400))/40 - (9 \cdot \exp(-249/400) \cdot \sin(1411/2000))/8$
 $+ 3/8, (51 \cdot \cos(357/500) \cdot \exp(-63/100))/40 - (9 \cdot \exp(-63/100) \cdot \sin(357/500))/8 +$
 $3/8, (51 \cdot \cos(289/400) \cdot \exp(-51/80))/40 - (9 \cdot \exp(-51/80) \cdot \sin(289/400))/8 + 3/8,$
 $(51 \cdot \cos(731/1000) \cdot \exp(-129/200))/40 - (9 \cdot \exp(-129/200) \cdot \sin(731/1000))/8 + 3/8,$
 $(51 \cdot \cos(1479/2000) \cdot \exp(-261/400))/40 - (9 \cdot \exp(-261/400) \cdot \sin(1479/2000))/8 +$
 $3/8, (51 \cdot \cos(187/250) \cdot \exp(-33/50))/40 - (9 \cdot \exp(-33/50) \cdot \sin(187/250))/8 + 3/8,$
 $(51 \cdot \cos(1513/2000) \cdot \exp(-267/400))/40 - (9 \cdot \exp(-267/400) \cdot \sin(1513/2000))/8 +$
 $3/8, (51 \cdot \cos(153/200) \cdot \exp(-27/40))/40 - (9 \cdot \exp(-27/40) \cdot \sin(153/200))/8 + 3/8,$
 $(51 \cdot \cos(1547/2000) \cdot \exp(-273/400))/40 - (9 \cdot \exp(-273/400) \cdot \sin(1547/2000))/8 +$
 $3/8, (51 \cdot \cos(391/500) \cdot \exp(-69/100))/40 - (9 \cdot \exp(-69/100) \cdot \sin(391/500))/8 + 3/8,$

$(51 \cdot \cos(1581/2000) \cdot \exp(-279/400))/40 - (9 \cdot \exp(-279/400) \cdot \sin(1581/2000))/8 + 3/8,$
 $(51 \cdot \cos(799/1000) \cdot \exp(-141/200))/40 - (9 \cdot \exp(-141/200) \cdot \sin(799/1000))/8 + 3/8,$
 $(51 \cdot \cos(323/400) \cdot \exp(-57/80))/40 - (9 \cdot \exp(-57/80) \cdot \sin(323/400))/8 + 3/8,$
 $(51 \cdot \cos(102/125) \cdot \exp(-18/25))/40 - (9 \cdot \exp(-18/25) \cdot \sin(102/125))/8 + 3/8,$
 $(51 \cdot \cos(1649/2000) \cdot \exp(-291/400))/40 - (9 \cdot \exp(-291/400) \cdot \sin(1649/2000))/8 + 3/8,$
 $(51 \cdot \cos(833/1000) \cdot \exp(-147/200))/40 - (9 \cdot \exp(-147/200) \cdot \sin(833/1000))/8 + 3/8,$
 $(51 \cdot \cos(1683/2000) \cdot \exp(-297/400))/40 - (9 \cdot \exp(-297/400) \cdot \sin(1683/2000))/8 + 3/8,$
 $(51 \cdot \cos(17/20) \cdot \exp(-3/4))/40 - (9 \cdot \exp(-3/4) \cdot \sin(17/20))/8 + 3/8,$
 $(51 \cdot \cos(1717/2000) \cdot \exp(-303/400))/40 - (9 \cdot \exp(-303/400) \cdot \sin(1717/2000))/8 + 3/8,$
 $(51 \cdot \cos(867/1000) \cdot \exp(-153/200))/40 - (9 \cdot \exp(-153/200) \cdot \sin(867/1000))/8 + 3/8,$
 $(51 \cdot \cos(1751/2000) \cdot \exp(-309/400))/40 - (9 \cdot \exp(-309/400) \cdot \sin(1751/2000))/8 + 3/8,$
 $(51 \cdot \cos(221/250) \cdot \exp(-39/50))/40 - (9 \cdot \exp(-39/50) \cdot \sin(221/250))/8 + 3/8,$
 $(51 \cdot \cos(357/400) \cdot \exp(-63/80))/40 - (9 \cdot \exp(-63/80) \cdot \sin(357/400))/8 + 3/8,$
 $(51 \cdot \cos(901/1000) \cdot \exp(-159/200))/40 - (9 \cdot \exp(-159/200) \cdot \sin(901/1000))/8 + 3/8,$
 $(51 \cdot \cos(1819/2000) \cdot \exp(-321/400))/40 - (9 \cdot \exp(-321/400) \cdot \sin(1819/2000))/8 + 3/8,$
 $(51 \cdot \cos(459/500) \cdot \exp(-81/100))/40 - (9 \cdot \exp(-81/100) \cdot \sin(459/500))/8 + 3/8,$
 $(51 \cdot \cos(1853/2000) \cdot \exp(-327/400))/40 - (9 \cdot \exp(-327/400) \cdot \sin(1853/2000))/8 + 3/8,$
 $(51 \cdot \cos(187/200) \cdot \exp(-33/40))/40 - (9 \cdot \exp(-33/40) \cdot \sin(187/200))/8 + 3/8,$
 $(51 \cdot \cos(1887/2000) \cdot \exp(-333/400))/40 - (9 \cdot \exp(-333/400) \cdot \sin(1887/2000))/8 + 3/8,$
 $(51 \cdot \cos(119/125) \cdot \exp(-21/25))/40 - (9 \cdot \exp(-21/25) \cdot \sin(119/125))/8 + 3/8,$
 $(51 \cdot \cos(1921/2000) \cdot \exp(-339/400))/40 - (9 \cdot \exp(-339/400) \cdot \sin(1921/2000))/8 + 3/8,$
 $(51 \cdot \cos(969/1000) \cdot \exp(-171/200))/40 - (9 \cdot \exp(-171/200) \cdot \sin(969/1000))/8 + 3/8,$
 $(51 \cdot \cos(391/400) \cdot \exp(-69/80))/40 - (9 \cdot \exp(-69/80) \cdot \sin(391/400))/8 + 3/8,$
 $(51 \cdot \cos(493/500) \cdot \exp(-87/100))/40 - (9 \cdot \exp(-87/100) \cdot \sin(493/500))/8 + 3/8,$
 $(51 \cdot \cos(1989/2000) \cdot \exp(-351/400))/40 - (9 \cdot \exp(-351/400) \cdot \sin(1989/2000))/8 + 3/8,$
 $(51 \cdot \cos(1003/1000) \cdot \exp(-177/200))/40 - (9 \cdot \exp(-177/200) \cdot \sin(1003/1000))/8 + 3/8,$
 $(51 \cdot \cos(2023/2000) \cdot \exp(-357/400))/40 - (9 \cdot \exp(-357/400) \cdot \sin(2023/2000))/8 + 3/8,$
 $(51 \cdot \cos(51/50) \cdot \exp(-9/10))/40 - (9 \cdot \exp(-9/10) \cdot \sin(51/50))/8 + 3/8,$
 $(51 \cdot \cos(2057/2000) \cdot \exp(-363/400))/40 - (9 \cdot \exp(-363/400) \cdot \sin(2057/2000))/8 + 3/8,$
 $(51 \cdot \cos(1037/1000) \cdot \exp(-183/200))/40 - (9 \cdot \exp(-183/200) \cdot \sin(1037/1000))/8 + 3/8,$
 $(51 \cdot \cos(2091/2000) \cdot \exp(-369/400))/40 - (9 \cdot \exp(-369/400) \cdot \sin(2091/2000))/8 + 3/8,$
 $(51 \cdot \cos(527/500) \cdot \exp(-93/100))/40 - (9 \cdot \exp(-93/100) \cdot \sin(527/500))/8 + 3/8,$
 $(51 \cdot \cos(17/16) \cdot \exp(-15/16))/40 - (9 \cdot \exp(-15/16) \cdot \sin(17/16))/8 + 3/8,$
 $(51 \cdot \cos(1071/1000) \cdot \exp(-189/200))/40 - (9 \cdot \exp(-189/200) \cdot \sin(1071/1000))/8 + 3/8,$

$(51 \cdot \cos(2159/2000) \cdot \exp(-381/400))/40 - (9 \cdot \exp(-381/400) \cdot \sin(2159/2000))/8 + 3/8,$
 $(51 \cdot \cos(136/125) \cdot \exp(-24/25))/40 - (9 \cdot \exp(-24/25) \cdot \sin(136/125))/8 + 3/8,$
 $(51 \cdot \cos(2193/2000) \cdot \exp(-387/400))/40 - (9 \cdot \exp(-387/400) \cdot \sin(2193/2000))/8 + 3/8,$
 $(51 \cdot \cos(221/200) \cdot \exp(-39/40))/40 - (9 \cdot \exp(-39/40) \cdot \sin(221/200))/8 + 3/8,$
 $(51 \cdot \cos(2227/2000) \cdot \exp(-393/400))/40 - (9 \cdot \exp(-393/400) \cdot \sin(2227/2000))/8 + 3/8,$
 $(51 \cdot \cos(561/500) \cdot \exp(-99/100))/40 - (9 \cdot \exp(-99/100) \cdot \sin(561/500))/8 + 3/8,$
 $(51 \cdot \cos(2261/2000) \cdot \exp(-399/400))/40 - (9 \cdot \exp(-399/400) \cdot \sin(2261/2000))/8 + 3/8,$
 $(51 \cdot \cos(1139/1000) \cdot \exp(-201/200))/40 - (9 \cdot \exp(-201/200) \cdot \sin(1139/1000))/8 + 3/8,$
 $(51 \cdot \cos(459/400) \cdot \exp(-81/80))/40 - (9 \cdot \exp(-81/80) \cdot \sin(459/400))/8 + 3/8,$
 $(51 \cdot \cos(289/250) \cdot \exp(-51/50))/40 - (9 \cdot \exp(-51/50) \cdot \sin(289/250))/8 + 3/8,$
 $(51 \cdot \cos(2329/2000) \cdot \exp(-411/400))/40 - (9 \cdot \exp(-411/400) \cdot \sin(2329/2000))/8 + 3/8,$
 $(51 \cdot \cos(1173/1000) \cdot \exp(-207/200))/40 - (9 \cdot \exp(-207/200) \cdot \sin(1173/1000))/8 + 3/8,$
 $(51 \cdot \cos(2363/2000) \cdot \exp(-417/400))/40 - (9 \cdot \exp(-417/400) \cdot \sin(2363/2000))/8 + 3/8,$
 $(51 \cdot \cos(119/100) \cdot \exp(-21/20))/40 - (9 \cdot \exp(-21/20) \cdot \sin(119/100))/8 + 3/8,$
 $(51 \cdot \cos(2397/2000) \cdot \exp(-423/400))/40 - (9 \cdot \exp(-423/400) \cdot \sin(2397/2000))/8 + 3/8,$
 $(51 \cdot \cos(1207/1000) \cdot \exp(-213/200))/40 - (9 \cdot \exp(-213/200) \cdot \sin(1207/1000))/8 + 3/8,$
 $(51 \cdot \cos(2431/2000) \cdot \exp(-429/400))/40 - (9 \cdot \exp(-429/400) \cdot \sin(2431/2000))/8 + 3/8,$
 $(51 \cdot \cos(153/125) \cdot \exp(-27/25))/40 - (9 \cdot \exp(-27/25) \cdot \sin(153/125))/8 + 3/8,$
 $(51 \cdot \cos(493/400) \cdot \exp(-87/80))/40 - (9 \cdot \exp(-87/80) \cdot \sin(493/400))/8 + 3/8,$
 $(51 \cdot \cos(1241/1000) \cdot \exp(-219/200))/40 - (9 \cdot \exp(-219/200) \cdot \sin(1241/1000))/8 + 3/8,$
 $(51 \cdot \cos(2499/2000) \cdot \exp(-441/400))/40 - (9 \cdot \exp(-441/400) \cdot \sin(2499/2000))/8 + 3/8,$
 $(51 \cdot \cos(629/500) \cdot \exp(-111/100))/40 - (9 \cdot \exp(-111/100) \cdot \sin(629/500))/8 + 3/8,$
 $(51 \cdot \cos(2533/2000) \cdot \exp(-447/400))/40 - (9 \cdot \exp(-447/400) \cdot \sin(2533/2000))/8 + 3/8,$
 $(51 \cdot \cos(51/40) \cdot \exp(-9/8))/40 - (9 \cdot \exp(-9/8) \cdot \sin(51/40))/8 + 3/8,$
 $(51 \cdot \cos(2567/2000) \cdot \exp(-453/400))/40 - (9 \cdot \exp(-453/400) \cdot \sin(2567/2000))/8 + 3/8,$
 $(51 \cdot \cos(323/250) \cdot \exp(-57/50))/40 - (9 \cdot \exp(-57/50) \cdot \sin(323/250))/8 + 3/8,$
 $(51 \cdot \cos(2601/2000) \cdot \exp(-459/400))/40 - (9 \cdot \exp(-459/400) \cdot \sin(2601/2000))/8 + 3/8,$
 $(51 \cdot \cos(1309/1000) \cdot \exp(-231/200))/40 - (9 \cdot \exp(-231/200) \cdot \sin(1309/1000))/8 + 3/8,$
 $(51 \cdot \cos(527/400) \cdot \exp(-93/80))/40 - (9 \cdot \exp(-93/80) \cdot \sin(527/400))/8 + 3/8,$
 $(51 \cdot \cos(663/500) \cdot \exp(-117/100))/40 - (9 \cdot \exp(-117/100) \cdot \sin(663/500))/8 + 3/8,$
 $(51 \cdot \cos(2669/2000) \cdot \exp(-471/400))/40 - (9 \cdot \exp(-471/400) \cdot \sin(2669/2000))/8 + 3/8,$
 $(51 \cdot \cos(1343/1000) \cdot \exp(-237/200))/40 - (9 \cdot \exp(-237/200) \cdot \sin(1343/1000))/8 + 3/8,$
 $(51 \cdot \cos(2703/2000) \cdot \exp(-477/400))/40 - (9 \cdot \exp(-477/400) \cdot \sin(2703/2000))/8 + 3/8,$
 $(51 \cdot \cos(34/25) \cdot \exp(-6/5))/40 - (9 \cdot \exp(-6/5) \cdot \sin(34/25))/8 + 3/8,$

$6/5) \cdot \sin(34/25))/8 + 3/8, (51 \cdot \cos(2737/2000) \cdot \exp(-483/400))/40 - (9 \cdot \exp(-483/400) \cdot \sin(2737/2000))/8 + 3/8, (51 \cdot \cos(1377/1000) \cdot \exp(-243/200))/40 - (9 \cdot \exp(-243/200) \cdot \sin(1377/1000))/8 + 3/8, (51 \cdot \cos(2771/2000) \cdot \exp(-489/400))/40 - (9 \cdot \exp(-489/400) \cdot \sin(2771/2000))/8 + 3/8, (51 \cdot \cos(697/500) \cdot \exp(-123/100))/40 - (9 \cdot \exp(-123/100) \cdot \sin(697/500))/8 + 3/8, (51 \cdot \cos(561/400) \cdot \exp(-99/80))/40 - (9 \cdot \exp(-99/80) \cdot \sin(561/400))/8 + 3/8, (51 \cdot \cos(1411/1000) \cdot \exp(-249/200))/40 - (9 \cdot \exp(-249/200) \cdot \sin(1411/1000))/8 + 3/8, (51 \cdot \cos(2839/2000) \cdot \exp(-501/400))/40 - (9 \cdot \exp(-501/400) \cdot \sin(2839/2000))/8 + 3/8, (51 \cdot \cos(357/250) \cdot \exp(-63/50))/40 - (9 \cdot \exp(-63/50) \cdot \sin(357/250))/8 + 3/8, (51 \cdot \cos(2873/2000) \cdot \exp(-507/400))/40 - (9 \cdot \exp(-507/400) \cdot \sin(2873/2000))/8 + 3/8, (51 \cdot \cos(289/200) \cdot \exp(-51/40))/40 - (9 \cdot \exp(-51/40) \cdot \sin(289/200))/8 + 3/8, (51 \cdot \cos(2907/2000) \cdot \exp(-513/400))/40 - (9 \cdot \exp(-513/400) \cdot \sin(2907/2000))/8 + 3/8, (51 \cdot \cos(731/500) \cdot \exp(-129/100))/40 - (9 \cdot \exp(-129/100) \cdot \sin(731/500))/8 + 3/8, (51 \cdot \cos(2941/2000) \cdot \exp(-519/400))/40 - (9 \cdot \exp(-519/400) \cdot \sin(2941/2000))/8 + 3/8, (51 \cdot \cos(1479/1000) \cdot \exp(-261/200))/40 - (9 \cdot \exp(-261/200) \cdot \sin(1479/1000))/8 + 3/8, (51 \cdot \cos(119/80) \cdot \exp(-21/16))/40 - (9 \cdot \exp(-21/16) \cdot \sin(119/80))/8 + 3/8, (51 \cdot \cos(187/125) \cdot \exp(-33/25))/40 - (9 \cdot \exp(-33/25) \cdot \sin(187/125))/8 + 3/8, (51 \cdot \cos(3009/2000) \cdot \exp(-531/400))/40 - (9 \cdot \exp(-531/400) \cdot \sin(3009/2000))/8 + 3/8, (51 \cdot \cos(1513/1000) \cdot \exp(-267/200))/40 - (9 \cdot \exp(-267/200) \cdot \sin(1513/1000))/8 + 3/8, (51 \cdot \cos(3043/2000) \cdot \exp(-537/400))/40 - (9 \cdot \exp(-537/400) \cdot \sin(3043/2000))/8 + 3/8, (51 \cdot \cos(153/100) \cdot \exp(-27/20))/40 - (9 \cdot \exp(-27/20) \cdot \sin(153/100))/8 + 3/8, (51 \cdot \cos(3077/2000) \cdot \exp(-543/400))/40 - (9 \cdot \exp(-543/400) \cdot \sin(3077/2000))/8 + 3/8, (51 \cdot \cos(1547/1000) \cdot \exp(-273/200))/40 - (9 \cdot \exp(-273/200) \cdot \sin(1547/1000))/8 + 3/8, (51 \cdot \cos(3111/2000) \cdot \exp(-549/400))/40 - (9 \cdot \exp(-549/400) \cdot \sin(3111/2000))/8 + 3/8, (51 \cdot \cos(391/250) \cdot \exp(-69/50))/40 - (9 \cdot \exp(-69/50) \cdot \sin(391/250))/8 + 3/8, (51 \cdot \cos(629/400) \cdot \exp(-111/80))/40 - (9 \cdot \exp(-111/80) \cdot \sin(629/400))/8 + 3/8, (51 \cdot \cos(1581/1000) \cdot \exp(-279/200))/40 - (9 \cdot \exp(-279/200) \cdot \sin(1581/1000))/8 + 3/8, (51 \cdot \cos(3179/2000) \cdot \exp(-561/400))/40 - (9 \cdot \exp(-561/400) \cdot \sin(3179/2000))/8 + 3/8, (51 \cdot \cos(799/500) \cdot \exp(-141/100))/40 - (9 \cdot \exp(-141/100) \cdot \sin(799/500))/8 + 3/8, (51 \cdot \cos(3213/2000) \cdot \exp(-567/400))/40 - (9 \cdot \exp(-567/400) \cdot \sin(3213/2000))/8 + 3/8, (51 \cdot \cos(323/200) \cdot \exp(-57/40))/40 - (9 \cdot \exp(-57/40) \cdot \sin(323/200))/8 + 3/8, (51 \cdot \cos(3247/2000) \cdot \exp(-573/400))/40 - (9 \cdot \exp(-573/400) \cdot \sin(3247/2000))/8 + 3/8, (51 \cdot \cos(204/125) \cdot \exp(-36/25))/40 - (9 \cdot \exp(-36/25) \cdot \sin(204/125))/8 + 3/8, (51 \cdot \cos(3281/2000) \cdot \exp(-579/400))/40 - (9 \cdot \exp(-579/400) \cdot \sin(3281/2000))/8 +$

$$\begin{aligned}
& 3/8, (51*\cos(1649/1000)*\exp(-291/200))/40 - (9*\exp(-291/200)*\sin(1649/1000))/8 \\
& + 3/8, (51*\cos(663/400)*\exp(-117/80))/40 - (9*\exp(-117/80)*\sin(663/400))/8 + \\
& 3/8, (51*\cos(833/500)*\exp(-147/100))/40 - (9*\exp(-147/100)*\sin(833/500))/8 + \\
& 3/8, (51*\cos(3349/2000)*\exp(-591/400))/40 - (9*\exp(-591/400)*\sin(3349/2000))/8 \\
& + 3/8, (51*\cos(1683/1000)*\exp(-297/200))/40 - (9*\exp(- \\
& 297/200)*\sin(1683/1000))/8 + 3/8, (51*\cos(3383/2000)*\exp(-597/400))/40 - \\
& (9*\exp(-597/400)*\sin(3383/2000))/8 + 3/8, (51*\cos(17/10)*\exp(-3/2))/40 - \\
& (9*\exp(-3/2)*\sin(17/10))/8 + 3/8, (51*\cos(3417/2000)*\exp(-603/400))/40 - \\
& (9*\exp(-603/400)*\sin(3417/2000))/8 + 3/8, (51*\cos(1717/1000)*\exp(- \\
& 303/200))/40 - (9*\exp(-303/200)*\sin(1717/1000))/8 + 3/8, \\
& (51*\cos(3451/2000)*\exp(-609/400))/40 - (9*\exp(-609/400)*\sin(3451/2000))/8 + \\
& 3/8, (51*\cos(867/500)*\exp(-153/100))/40 - (9*\exp(-153/100)*\sin(867/500))/8 + \\
& 3/8, (51*\cos(697/400)*\exp(-123/80))/40 - (9*\exp(-123/80)*\sin(697/400))/8 + 3/8, \\
& (51*\cos(1751/1000)*\exp(-309/200))/40 - (9*\exp(-309/200)*\sin(1751/1000))/8 + \\
& 3/8, (51*\cos(3519/2000)*\exp(-621/400))/40 - (9*\exp(-621/400)*\sin(3519/2000))/8 \\
& + 3/8, (51*\cos(221/125)*\exp(-39/25))/40 - (9*\exp(-39/25)*\sin(221/125))/8 + 3/8, \\
& (51*\cos(3553/2000)*\exp(-627/400))/40 - (9*\exp(-627/400)*\sin(3553/2000))/8 + \\
& 3/8, (51*\cos(357/200)*\exp(-63/40))/40 - (9*\exp(-63/40)*\sin(357/200))/8 + 3/8, \\
& (51*\cos(3587/2000)*\exp(-633/400))/40 - (9*\exp(-633/400)*\sin(3587/2000))/8 + \\
& 3/8, (51*\cos(901/500)*\exp(-159/100))/40 - (9*\exp(-159/100)*\sin(901/500))/8 + \\
& 3/8, (51*\cos(3621/2000)*\exp(-639/400))/40 - (9*\exp(-639/400)*\sin(3621/2000))/8 \\
& + 3/8, (51*\cos(1819/1000)*\exp(-321/200))/40 - (9*\exp(- \\
& 321/200)*\sin(1819/1000))/8 + 3/8, (51*\cos(731/400)*\exp(-129/80))/40 - (9*\exp(- \\
& 129/80)*\sin(731/400))/8 + 3/8, (51*\cos(459/250)*\exp(-81/50))/40 - (9*\exp(- \\
& 81/50)*\sin(459/250))/8 + 3/8, (51*\cos(3689/2000)*\exp(-651/400))/40 - (9*\exp(- \\
& 651/400)*\sin(3689/2000))/8 + 3/8, (51*\cos(1853/1000)*\exp(-327/200))/40 - \\
& (9*\exp(-327/200)*\sin(1853/1000))/8 + 3/8, (51*\cos(3723/2000)*\exp(- \\
& 657/400))/40 - (9*\exp(-657/400)*\sin(3723/2000))/8 + 3/8, (51*\cos(187/100)*\exp(- \\
& 33/20))/40 - (9*\exp(-33/20)*\sin(187/100))/8 + 3/8, (51*\cos(3757/2000)*\exp(- \\
& 663/400))/40 - (9*\exp(-663/400)*\sin(3757/2000))/8 + 3/8, \\
& (51*\cos(1887/1000)*\exp(-333/200))/40 - (9*\exp(-333/200)*\sin(1887/1000))/8 + \\
& 3/8, (51*\cos(3791/2000)*\exp(-669/400))/40 - (9*\exp(-669/400)*\sin(3791/2000))/8 \\
& + 3/8, (51*\cos(238/125)*\exp(-42/25))/40 - (9*\exp(-42/25)*\sin(238/125))/8 + 3/8, \\
& (51*\cos(153/80)*\exp(-27/16))/40 - (9*\exp(-27/16)*\sin(153/80))/8 + 3/8, \\
& (51*\cos(1921/1000)*\exp(-339/200))/40 - (9*\exp(-339/200)*\sin(1921/1000))/8 +
\end{aligned}$$

$$\begin{aligned}
& 3/8, (51*\cos(3859/2000)*\exp(-681/400))/40 - (9*\exp(-681/400)*\sin(3859/2000))/8 \\
& + 3/8, (51*\cos(969/500)*\exp(-171/100))/40 - (9*\exp(-171/100)*\sin(969/500))/8 + \\
& 3/8, (51*\cos(3893/2000)*\exp(-687/400))/40 - (9*\exp(-687/400)*\sin(3893/2000))/8 \\
& + 3/8, (51*\cos(391/200)*\exp(-69/40))/40 - (9*\exp(-69/40)*\sin(391/200))/8 + 3/8, \\
& (51*\cos(3927/2000)*\exp(-693/400))/40 - (9*\exp(-693/400)*\sin(3927/2000))/8 + \\
& 3/8, (51*\cos(493/250)*\exp(-87/50))/40 - (9*\exp(-87/50)*\sin(493/250))/8 + 3/8, \\
& (51*\cos(3961/2000)*\exp(-699/400))/40 - (9*\exp(-699/400)*\sin(3961/2000))/8 + \\
& 3/8, (51*\cos(1989/1000)*\exp(-351/200))/40 - (9*\exp(-351/200)*\sin(1989/1000))/8 \\
& + 3/8, (51*\cos(799/400)*\exp(-141/80))/40 - (9*\exp(-141/80)*\sin(799/400))/8 + \\
& 3/8, (51*\cos(1003/500)*\exp(-177/100))/40 - (9*\exp(-177/100)*\sin(1003/500))/8 + \\
& 3/8, (51*\cos(4029/2000)*\exp(-711/400))/40 - (9*\exp(-711/400)*\sin(4029/2000))/8 \\
& + 3/8, (51*\cos(2023/1000)*\exp(-357/200))/40 - (9*\exp(- \\
& 357/200)*\sin(2023/1000))/8 + 3/8, (51*\cos(4063/2000)*\exp(-717/400))/40 - \\
& (9*\exp(-717/400)*\sin(4063/2000))/8 + 3/8, (51*\cos(51/25)*\exp(-9/5))/40 - \\
& (9*\exp(-9/5)*\sin(51/25))/8 + 3/8, (51*\cos(4097/2000)*\exp(-723/400))/40 - \\
& (9*\exp(-723/400)*\sin(4097/2000))/8 + 3/8, (51*\cos(2057/1000)*\exp(- \\
& 363/200))/40 - (9*\exp(-363/200)*\sin(2057/1000))/8 + 3/8, \\
& (51*\cos(4131/2000)*\exp(-729/400))/40 - (9*\exp(-729/400)*\sin(4131/2000))/8 + \\
& 3/8, (51*\cos(1037/500)*\exp(-183/100))/40 - (9*\exp(-183/100)*\sin(1037/500))/8 + \\
& 3/8, (51*\cos(833/400)*\exp(-147/80))/40 - (9*\exp(-147/80)*\sin(833/400))/8 + 3/8, \\
& (51*\cos(2091/1000)*\exp(-369/200))/40 - (9*\exp(-369/200)*\sin(2091/1000))/8 + \\
& 3/8, (51*\cos(4199/2000)*\exp(-741/400))/40 - (9*\exp(-741/400)*\sin(4199/2000))/8 \\
& + 3/8, (51*\cos(527/250)*\exp(-93/50))/40 - (9*\exp(-93/50)*\sin(527/250))/8 + 3/8, \\
& (51*\cos(4233/2000)*\exp(-747/400))/40 - (9*\exp(-747/400)*\sin(4233/2000))/8 + \\
& 3/8, (51*\cos(17/8)*\exp(-15/8))/40 - (9*\exp(-15/8)*\sin(17/8))/8 + 3/8]
\end{aligned}$$

a =

$$- (153*\cos((17*t)/20)*\exp(-(3*t)/4))/80 - (6*\sin((17*t)/20)*\exp(-(3*t)/4))/25$$

an =

$$\begin{aligned} & [-153/80, - (153*\cos(17/2000)*\exp(-3/400))/80 - (6*\exp(- \\ & 3/400)*\sin(17/2000))/25, - (153*\cos(17/1000)*\exp(-3/200))/80 - (6*\exp(- \\ & 3/200)*\sin(17/1000))/25, - (153*\cos(51/2000)*\exp(-9/400))/80 - (6*\exp(- \\ & 9/400)*\sin(51/2000))/25, - (153*\cos(17/500)*\exp(-3/100))/80 - (6*\exp(- \\ & 3/100)*\sin(17/500))/25, - (153*\cos(17/400)*\exp(-3/80))/80 - (6*\exp(- \\ & 3/80)*\sin(17/400))/25, - (153*\cos(51/1000)*\exp(-9/200))/80 - (6*\exp(- \\ & 9/200)*\sin(51/1000))/25, - (153*\cos(119/2000)*\exp(-21/400))/80 - (6*\exp(- \\ & 21/400)*\sin(119/2000))/25, - (153*\cos(17/250)*\exp(-3/50))/80 - (6*\exp(- \\ & 3/50)*\sin(17/250))/25, - (153*\cos(153/2000)*\exp(-27/400))/80 - (6*\exp(- \\ & 27/400)*\sin(153/2000))/25, - (153*\cos(17/200)*\exp(-3/40))/80 - (6*\exp(- \\ & 3/40)*\sin(17/200))/25, - (153*\cos(187/2000)*\exp(-33/400))/80 - (6*\exp(- \\ & 33/400)*\sin(187/2000))/25, - (153*\cos(51/500)*\exp(-9/100))/80 - (6*\exp(- \\ & 9/100)*\sin(51/500))/25, - (153*\cos(221/2000)*\exp(-39/400))/80 - (6*\exp(- \\ & 39/400)*\sin(221/2000))/25, - (153*\cos(119/1000)*\exp(-21/200))/80 - (6*\exp(- \\ & 21/200)*\sin(119/1000))/25, - (153*\cos(51/400)*\exp(-9/80))/80 - (6*\exp(- \\ & 9/80)*\sin(51/400))/25, - (153*\cos(17/125)*\exp(-3/25))/80 - (6*\exp(- \\ & 3/25)*\sin(17/125))/25, - (153*\cos(289/2000)*\exp(-51/400))/80 - (6*\exp(- \\ & 51/400)*\sin(289/2000))/25, - (153*\cos(153/1000)*\exp(-27/200))/80 - (6*\exp(- \\ & 27/200)*\sin(153/1000))/25, - (153*\cos(323/2000)*\exp(-57/400))/80 - (6*\exp(- \\ & 57/400)*\sin(323/2000))/25, - (153*\cos(17/100)*\exp(-3/20))/80 - (6*\exp(- \\ & 3/20)*\sin(17/100))/25, - (153*\cos(357/2000)*\exp(-63/400))/80 - (6*\exp(- \\ & 63/400)*\sin(357/2000))/25, - (153*\cos(187/1000)*\exp(-33/200))/80 - (6*\exp(- \\ & 33/200)*\sin(187/1000))/25, - (153*\cos(391/2000)*\exp(-69/400))/80 - (6*\exp(- \\ & 69/400)*\sin(391/2000))/25, - (153*\cos(51/250)*\exp(-9/50))/80 - (6*\exp(- \\ & 9/50)*\sin(51/250))/25, - (153*\cos(17/80)*\exp(-3/16))/80 - (6*\exp(- \\ & 3/16)*\sin(17/80))/25, - (153*\cos(221/1000)*\exp(-39/200))/80 - (6*\exp(- \\ & 39/200)*\sin(221/1000))/25, - (153*\cos(459/2000)*\exp(-81/400))/80 - (6*\exp(- \\ & 81/400)*\sin(459/2000))/25, - (153*\cos(119/500)*\exp(-21/100))/80 - (6*\exp(- \\ & 21/100)*\sin(119/500))/25, - (153*\cos(493/2000)*\exp(-87/400))/80 - (6*\exp(- \\ & 87/400)*\sin(493/2000))/25, - (153*\cos(51/200)*\exp(-9/40))/80 - (6*\exp(- \\ & 9/40)*\sin(51/200))/25, - (153*\cos(527/2000)*\exp(-93/400))/80 - (6*\exp(- \\ & 93/400)*\sin(527/2000))/25, - (153*\cos(34/125)*\exp(-6/25))/80 - (6*\exp(- \end{aligned}$$

$6/25) * \sin(34/125))/25, - (153 * \cos(561/2000) * \exp(-99/400))/80 - (6 * \exp(-99/400) * \sin(561/2000))/25, - (153 * \cos(289/1000) * \exp(-51/200))/80 - (6 * \exp(-51/200) * \sin(289/1000))/25, - (153 * \cos(119/400) * \exp(-21/80))/80 - (6 * \exp(-21/80) * \sin(119/400))/25, - (153 * \cos(153/500) * \exp(-27/100))/80 - (6 * \exp(-27/100) * \sin(153/500))/25, - (153 * \cos(629/2000) * \exp(-111/400))/80 - (6 * \exp(-111/400) * \sin(629/2000))/25, - (153 * \cos(323/1000) * \exp(-57/200))/80 - (6 * \exp(-57/200) * \sin(323/1000))/25, - (153 * \cos(663/2000) * \exp(-117/400))/80 - (6 * \exp(-117/400) * \sin(663/2000))/25, - (153 * \cos(17/50) * \exp(-3/10))/80 - (6 * \exp(-3/10) * \sin(17/50))/25, - (153 * \cos(697/2000) * \exp(-123/400))/80 - (6 * \exp(-123/400) * \sin(697/2000))/25, - (153 * \cos(357/1000) * \exp(-63/200))/80 - (6 * \exp(-63/200) * \sin(357/1000))/25, - (153 * \cos(731/2000) * \exp(-129/400))/80 - (6 * \exp(-129/400) * \sin(731/2000))/25, - (153 * \cos(187/500) * \exp(-33/100))/80 - (6 * \exp(-33/100) * \sin(187/500))/25, - (153 * \cos(153/400) * \exp(-27/80))/80 - (6 * \exp(-27/80) * \sin(153/400))/25, - (153 * \cos(391/1000) * \exp(-69/200))/80 - (6 * \exp(-69/200) * \sin(391/1000))/25, - (153 * \cos(799/2000) * \exp(-141/400))/80 - (6 * \exp(-141/400) * \sin(799/2000))/25, - (153 * \cos(51/125) * \exp(-9/25))/80 - (6 * \exp(-9/25) * \sin(51/125))/25, - (153 * \cos(833/2000) * \exp(-147/400))/80 - (6 * \exp(-147/400) * \sin(833/2000))/25, - (153 * \cos(17/40) * \exp(-3/8))/80 - (6 * \exp(-3/8) * \sin(17/40))/25, - (153 * \cos(867/2000) * \exp(-153/400))/80 - (6 * \exp(-153/400) * \sin(867/2000))/25, - (153 * \cos(221/500) * \exp(-39/100))/80 - (6 * \exp(-39/100) * \sin(221/500))/25, - (153 * \cos(901/2000) * \exp(-159/400))/80 - (6 * \exp(-159/400) * \sin(901/2000))/25, - (153 * \cos(459/1000) * \exp(-81/200))/80 - (6 * \exp(-81/200) * \sin(459/1000))/25, - (153 * \cos(187/400) * \exp(-33/80))/80 - (6 * \exp(-33/80) * \sin(187/400))/25, - (153 * \cos(119/250) * \exp(-21/50))/80 - (6 * \exp(-21/50) * \sin(119/250))/25, - (153 * \cos(969/2000) * \exp(-171/400))/80 - (6 * \exp(-171/400) * \sin(969/2000))/25, - (153 * \cos(493/1000) * \exp(-87/200))/80 - (6 * \exp(-87/200) * \sin(493/1000))/25, - (153 * \cos(1003/2000) * \exp(-177/400))/80 - (6 * \exp(-177/400) * \sin(1003/2000))/25, - (153 * \cos(51/100) * \exp(-9/20))/80 - (6 * \exp(-9/20) * \sin(51/100))/25, - (153 * \cos(1037/2000) * \exp(-183/400))/80 - (6 * \exp(-183/400) * \sin(1037/2000))/25, - (153 * \cos(527/1000) * \exp(-93/200))/80 - (6 * \exp(-93/200) * \sin(527/1000))/25, - (153 * \cos(1071/2000) * \exp(-189/400))/80 - (6 * \exp(-189/400) * \sin(1071/2000))/25, - (153 * \cos(68/125) * \exp(-12/25))/80 - (6 * \exp(-12/25) * \sin(68/125))/25, - (153 * \cos(221/400) * \exp(-39/80))/80 - (6 * \exp(-39/80) * \sin(221/400))/25, - (153 * \cos(561/1000) * \exp(-99/200))/80 - (6 * \exp(-99/200) * \sin(561/1000))/25, - (153 * \cos(1139/2000) * \exp(-201/400))/80 - (6 * \exp(-$

$201/400) * \sin(1139/2000))/25, - (153 * \cos(289/500) * \exp(-51/100))/80 - (6 * \exp(-51/100) * \sin(289/500))/25, - (153 * \cos(1173/2000) * \exp(-207/400))/80 - (6 * \exp(-207/400) * \sin(1173/2000))/25, - (153 * \cos(119/200) * \exp(-21/40))/80 - (6 * \exp(-21/40) * \sin(119/200))/25, - (153 * \cos(1207/2000) * \exp(-213/400))/80 - (6 * \exp(-213/400) * \sin(1207/2000))/25, - (153 * \cos(153/250) * \exp(-27/50))/80 - (6 * \exp(-27/50) * \sin(153/250))/25, - (153 * \cos(1241/2000) * \exp(-219/400))/80 - (6 * \exp(-219/400) * \sin(1241/2000))/25, - (153 * \cos(629/1000) * \exp(-111/200))/80 - (6 * \exp(-111/200) * \sin(629/1000))/25, - (153 * \cos(51/80) * \exp(-9/16))/80 - (6 * \exp(-9/16) * \sin(51/80))/25, - (153 * \cos(323/500) * \exp(-57/100))/80 - (6 * \exp(-57/100) * \sin(323/500))/25, - (153 * \cos(1309/2000) * \exp(-231/400))/80 - (6 * \exp(-231/400) * \sin(1309/2000))/25, - (153 * \cos(663/1000) * \exp(-117/200))/80 - (6 * \exp(-117/200) * \sin(663/1000))/25, - (153 * \cos(1343/2000) * \exp(-237/400))/80 - (6 * \exp(-237/400) * \sin(1343/2000))/25, - (153 * \cos(17/25) * \exp(-3/5))/80 - (6 * \exp(-3/5) * \sin(17/25))/25, - (153 * \cos(1377/2000) * \exp(-243/400))/80 - (6 * \exp(-243/400) * \sin(1377/2000))/25, - (153 * \cos(697/1000) * \exp(-123/200))/80 - (6 * \exp(-123/200) * \sin(697/1000))/25, - (153 * \cos(1411/2000) * \exp(-249/400))/80 - (6 * \exp(-249/400) * \sin(1411/2000))/25, - (153 * \cos(357/500) * \exp(-63/100))/80 - (6 * \exp(-63/100) * \sin(357/500))/25, - (153 * \cos(289/400) * \exp(-51/80))/80 - (6 * \exp(-51/80) * \sin(289/400))/25, - (153 * \cos(731/1000) * \exp(-129/200))/80 - (6 * \exp(-129/200) * \sin(731/1000))/25, - (153 * \cos(1479/2000) * \exp(-261/400))/80 - (6 * \exp(-261/400) * \sin(1479/2000))/25, - (153 * \cos(187/250) * \exp(-33/50))/80 - (6 * \exp(-33/50) * \sin(187/250))/25, - (153 * \cos(1513/2000) * \exp(-267/400))/80 - (6 * \exp(-267/400) * \sin(1513/2000))/25, - (153 * \cos(153/200) * \exp(-27/40))/80 - (6 * \exp(-27/40) * \sin(153/200))/25, - (153 * \cos(1547/2000) * \exp(-273/400))/80 - (6 * \exp(-273/400) * \sin(1547/2000))/25, - (153 * \cos(391/500) * \exp(-69/100))/80 - (6 * \exp(-69/100) * \sin(391/500))/25, - (153 * \cos(1581/2000) * \exp(-279/400))/80 - (6 * \exp(-279/400) * \sin(1581/2000))/25, - (153 * \cos(799/1000) * \exp(-141/200))/80 - (6 * \exp(-141/200) * \sin(799/1000))/25, - (153 * \cos(323/400) * \exp(-57/80))/80 - (6 * \exp(-57/80) * \sin(323/400))/25, - (153 * \cos(102/125) * \exp(-18/25))/80 - (6 * \exp(-18/25) * \sin(102/125))/25, - (153 * \cos(1649/2000) * \exp(-291/400))/80 - (6 * \exp(-291/400) * \sin(1649/2000))/25, - (153 * \cos(833/1000) * \exp(-147/200))/80 - (6 * \exp(-147/200) * \sin(833/1000))/25, - (153 * \cos(1683/2000) * \exp(-297/400))/80 - (6 * \exp(-297/400) * \sin(1683/2000))/25, - (153 * \cos(17/20) * \exp(-3/4))/80 - (6 * \exp(-3/4) * \sin(17/20))/25, - (153 * \cos(1717/2000) * \exp(-303/400))/80 - (6 * \exp(-303/400) * \sin(1717/2000))/25, - (153 * \cos(867/1000) * \exp(-153/200))/80 - (6 * \exp(-$

$153/200) * \sin(867/1000))/25, - (153 * \cos(1751/2000) * \exp(-309/400))/80 - (6 * \exp(-309/400) * \sin(1751/2000))/25, - (153 * \cos(221/250) * \exp(-39/50))/80 - (6 * \exp(-39/50) * \sin(221/250))/25, - (153 * \cos(357/400) * \exp(-63/80))/80 - (6 * \exp(-63/80) * \sin(357/400))/25, - (153 * \cos(901/1000) * \exp(-159/200))/80 - (6 * \exp(-159/200) * \sin(901/1000))/25, - (153 * \cos(1819/2000) * \exp(-321/400))/80 - (6 * \exp(-321/400) * \sin(1819/2000))/25, - (153 * \cos(459/500) * \exp(-81/100))/80 - (6 * \exp(-81/100) * \sin(459/500))/25, - (153 * \cos(1853/2000) * \exp(-327/400))/80 - (6 * \exp(-327/400) * \sin(1853/2000))/25, - (153 * \cos(187/200) * \exp(-33/40))/80 - (6 * \exp(-33/40) * \sin(187/200))/25, - (153 * \cos(1887/2000) * \exp(-333/400))/80 - (6 * \exp(-333/400) * \sin(1887/2000))/25, - (153 * \cos(119/125) * \exp(-21/25))/80 - (6 * \exp(-21/25) * \sin(119/125))/25, - (153 * \cos(1921/2000) * \exp(-339/400))/80 - (6 * \exp(-339/400) * \sin(1921/2000))/25, - (153 * \cos(969/1000) * \exp(-171/200))/80 - (6 * \exp(-171/200) * \sin(969/1000))/25, - (153 * \cos(391/400) * \exp(-69/80))/80 - (6 * \exp(-69/80) * \sin(391/400))/25, - (153 * \cos(493/500) * \exp(-87/100))/80 - (6 * \exp(-87/100) * \sin(493/500))/25, - (153 * \cos(1989/2000) * \exp(-351/400))/80 - (6 * \exp(-351/400) * \sin(1989/2000))/25, - (153 * \cos(1003/1000) * \exp(-177/200))/80 - (6 * \exp(-177/200) * \sin(1003/1000))/25, - (153 * \cos(2023/2000) * \exp(-357/400))/80 - (6 * \exp(-357/400) * \sin(2023/2000))/25, - (153 * \cos(51/50) * \exp(-9/10))/80 - (6 * \exp(-9/10) * \sin(51/50))/25, - (153 * \cos(2057/2000) * \exp(-363/400))/80 - (6 * \exp(-363/400) * \sin(2057/2000))/25, - (153 * \cos(1037/1000) * \exp(-183/200))/80 - (6 * \exp(-183/200) * \sin(1037/1000))/25, - (153 * \cos(2091/2000) * \exp(-369/400))/80 - (6 * \exp(-369/400) * \sin(2091/2000))/25, - (153 * \cos(527/500) * \exp(-93/100))/80 - (6 * \exp(-93/100) * \sin(527/500))/25, - (153 * \cos(17/16) * \exp(-15/16))/80 - (6 * \exp(-15/16) * \sin(17/16))/25, - (153 * \cos(1071/1000) * \exp(-189/200))/80 - (6 * \exp(-189/200) * \sin(1071/1000))/25, - (153 * \cos(2159/2000) * \exp(-381/400))/80 - (6 * \exp(-381/400) * \sin(2159/2000))/25, - (153 * \cos(136/125) * \exp(-24/25))/80 - (6 * \exp(-24/25) * \sin(136/125))/25, - (153 * \cos(2193/2000) * \exp(-387/400))/80 - (6 * \exp(-387/400) * \sin(2193/2000))/25, - (153 * \cos(221/200) * \exp(-39/40))/80 - (6 * \exp(-39/40) * \sin(221/200))/25, - (153 * \cos(2227/2000) * \exp(-393/400))/80 - (6 * \exp(-393/400) * \sin(2227/2000))/25, - (153 * \cos(561/500) * \exp(-99/100))/80 - (6 * \exp(-99/100) * \sin(561/500))/25, - (153 * \cos(2261/2000) * \exp(-399/400))/80 - (6 * \exp(-399/400) * \sin(2261/2000))/25, - (153 * \cos(1139/1000) * \exp(-201/200))/80 - (6 * \exp(-201/200) * \sin(1139/1000))/25, - (153 * \cos(459/400) * \exp(-81/80))/80 - (6 * \exp(-81/80) * \sin(459/400))/25, - (153 * \cos(289/250) * \exp(-51/50))/80 - (6 * \exp(-51/50) * \sin(289/250))/25, - (153 * \cos(2329/2000) * \exp(-411/400))/80 - (6 * \exp(-$

$411/400) \cdot \sin(2329/2000))/25, - (153 \cdot \cos(1173/1000) \cdot \exp(-207/200))/80 -$
 $(6 \cdot \exp(-207/200) \cdot \sin(1173/1000))/25, - (153 \cdot \cos(2363/2000) \cdot \exp(-417/400))/80 -$
 $(6 \cdot \exp(-417/400) \cdot \sin(2363/2000))/25, - (153 \cdot \cos(119/100) \cdot \exp(-21/20))/80 -$
 $(6 \cdot \exp(-21/20) \cdot \sin(119/100))/25, - (153 \cdot \cos(2397/2000) \cdot \exp(-423/400))/80 -$
 $(6 \cdot \exp(-423/400) \cdot \sin(2397/2000))/25, - (153 \cdot \cos(1207/1000) \cdot \exp(-213/200))/80 -$
 $(6 \cdot \exp(-213/200) \cdot \sin(1207/1000))/25, - (153 \cdot \cos(2431/2000) \cdot \exp(-429/400))/80 -$
 $(6 \cdot \exp(-429/400) \cdot \sin(2431/2000))/25, - (153 \cdot \cos(153/125) \cdot \exp(-27/25))/80 -$
 $(6 \cdot \exp(-27/25) \cdot \sin(153/125))/25, - (153 \cdot \cos(493/400) \cdot \exp(-87/80))/80 - (6 \cdot \exp(-$
 $87/80) \cdot \sin(493/400))/25, - (153 \cdot \cos(1241/1000) \cdot \exp(-219/200))/80 - (6 \cdot \exp(-$
 $219/200) \cdot \sin(1241/1000))/25, - (153 \cdot \cos(2499/2000) \cdot \exp(-441/400))/80 -$
 $(6 \cdot \exp(-441/400) \cdot \sin(2499/2000))/25, - (153 \cdot \cos(629/500) \cdot \exp(-111/100))/80 -$
 $(6 \cdot \exp(-111/100) \cdot \sin(629/500))/25, - (153 \cdot \cos(2533/2000) \cdot \exp(-447/400))/80 -$
 $(6 \cdot \exp(-447/400) \cdot \sin(2533/2000))/25, - (153 \cdot \cos(51/40) \cdot \exp(-9/8))/80 - (6 \cdot \exp(-$
 $9/8) \cdot \sin(51/40))/25, - (153 \cdot \cos(2567/2000) \cdot \exp(-453/400))/80 - (6 \cdot \exp(-$
 $453/400) \cdot \sin(2567/2000))/25, - (153 \cdot \cos(323/250) \cdot \exp(-57/50))/80 - (6 \cdot \exp(-$
 $57/50) \cdot \sin(323/250))/25, - (153 \cdot \cos(2601/2000) \cdot \exp(-459/400))/80 - (6 \cdot \exp(-$
 $459/400) \cdot \sin(2601/2000))/25, - (153 \cdot \cos(1309/1000) \cdot \exp(-231/200))/80 -$
 $(6 \cdot \exp(-231/200) \cdot \sin(1309/1000))/25, - (153 \cdot \cos(527/400) \cdot \exp(-93/80))/80 -$
 $(6 \cdot \exp(-93/80) \cdot \sin(527/400))/25, - (153 \cdot \cos(663/500) \cdot \exp(-117/100))/80 -$
 $(6 \cdot \exp(-117/100) \cdot \sin(663/500))/25, - (153 \cdot \cos(2669/2000) \cdot \exp(-471/400))/80 -$
 $(6 \cdot \exp(-471/400) \cdot \sin(2669/2000))/25, - (153 \cdot \cos(1343/1000) \cdot \exp(-237/200))/80 -$
 $(6 \cdot \exp(-237/200) \cdot \sin(1343/1000))/25, - (153 \cdot \cos(2703/2000) \cdot \exp(-477/400))/80 -$
 $(6 \cdot \exp(-477/400) \cdot \sin(2703/2000))/25, - (153 \cdot \cos(34/25) \cdot \exp(-6/5))/80 - (6 \cdot \exp(-$
 $6/5) \cdot \sin(34/25))/25, - (153 \cdot \cos(2737/2000) \cdot \exp(-483/400))/80 - (6 \cdot \exp(-$
 $483/400) \cdot \sin(2737/2000))/25, - (153 \cdot \cos(1377/1000) \cdot \exp(-243/200))/80 -$
 $(6 \cdot \exp(-243/200) \cdot \sin(1377/1000))/25, - (153 \cdot \cos(2771/2000) \cdot \exp(-489/400))/80 -$
 $(6 \cdot \exp(-489/400) \cdot \sin(2771/2000))/25, - (153 \cdot \cos(697/500) \cdot \exp(-123/100))/80 -$
 $(6 \cdot \exp(-123/100) \cdot \sin(697/500))/25, - (153 \cdot \cos(561/400) \cdot \exp(-99/80))/80 -$
 $(6 \cdot \exp(-99/80) \cdot \sin(561/400))/25, - (153 \cdot \cos(1411/1000) \cdot \exp(-249/200))/80 -$
 $(6 \cdot \exp(-249/200) \cdot \sin(1411/1000))/25, - (153 \cdot \cos(2839/2000) \cdot \exp(-501/400))/80 -$
 $(6 \cdot \exp(-501/400) \cdot \sin(2839/2000))/25, - (153 \cdot \cos(357/250) \cdot \exp(-63/50))/80 -$
 $(6 \cdot \exp(-63/50) \cdot \sin(357/250))/25, - (153 \cdot \cos(2873/2000) \cdot \exp(-507/400))/80 -$
 $(6 \cdot \exp(-507/400) \cdot \sin(2873/2000))/25, - (153 \cdot \cos(289/200) \cdot \exp(-51/40))/80 -$
 $(6 \cdot \exp(-51/40) \cdot \sin(289/200))/25, - (153 \cdot \cos(2907/2000) \cdot \exp(-513/400))/80 -$
 $(6 \cdot \exp(-513/400) \cdot \sin(2907/2000))/25, - (153 \cdot \cos(731/500) \cdot \exp(-129/100))/80 -$

$(6*\exp(-129/100)*\sin(731/500))/25, - (153*\cos(2941/2000)*\exp(-519/400))/80 -$
 $(6*\exp(-519/400)*\sin(2941/2000))/25, - (153*\cos(1479/1000)*\exp(-261/200))/80 -$
 $(6*\exp(-261/200)*\sin(1479/1000))/25, - (153*\cos(119/80)*\exp(-21/16))/80 -$
 $(6*\exp(-21/16)*\sin(119/80))/25, - (153*\cos(187/125)*\exp(-33/25))/80 - (6*\exp(-$
 $33/25)*\sin(187/125))/25, - (153*\cos(3009/2000)*\exp(-531/400))/80 - (6*\exp(-$
 $531/400)*\sin(3009/2000))/25, - (153*\cos(1513/1000)*\exp(-267/200))/80 -$
 $(6*\exp(-267/200)*\sin(1513/1000))/25, - (153*\cos(3043/2000)*\exp(-537/400))/80 -$
 $(6*\exp(-537/400)*\sin(3043/2000))/25, - (153*\cos(153/100)*\exp(-27/20))/80 -$
 $(6*\exp(-27/20)*\sin(153/100))/25, - (153*\cos(3077/2000)*\exp(-543/400))/80 -$
 $(6*\exp(-543/400)*\sin(3077/2000))/25, - (153*\cos(1547/1000)*\exp(-273/200))/80 -$
 $(6*\exp(-273/200)*\sin(1547/1000))/25, - (153*\cos(3111/2000)*\exp(-549/400))/80 -$
 $(6*\exp(-549/400)*\sin(3111/2000))/25, - (153*\cos(391/250)*\exp(-69/50))/80 -$
 $(6*\exp(-69/50)*\sin(391/250))/25, - (153*\cos(629/400)*\exp(-111/80))/80 -$
 $(6*\exp(-111/80)*\sin(629/400))/25, - (153*\cos(1581/1000)*\exp(-279/200))/80 -$
 $(6*\exp(-279/200)*\sin(1581/1000))/25, - (153*\cos(3179/2000)*\exp(-561/400))/80 -$
 $(6*\exp(-561/400)*\sin(3179/2000))/25, - (153*\cos(799/500)*\exp(-141/100))/80 -$
 $(6*\exp(-141/100)*\sin(799/500))/25, - (153*\cos(3213/2000)*\exp(-567/400))/80 -$
 $(6*\exp(-567/400)*\sin(3213/2000))/25, - (153*\cos(323/200)*\exp(-57/40))/80 -$
 $(6*\exp(-57/40)*\sin(323/200))/25, - (153*\cos(3247/2000)*\exp(-573/400))/80 -$
 $(6*\exp(-573/400)*\sin(3247/2000))/25, - (153*\cos(204/125)*\exp(-36/25))/80 -$
 $(6*\exp(-36/25)*\sin(204/125))/25, - (153*\cos(3281/2000)*\exp(-579/400))/80 -$
 $(6*\exp(-579/400)*\sin(3281/2000))/25, - (153*\cos(1649/1000)*\exp(-291/200))/80 -$
 $(6*\exp(-291/200)*\sin(1649/1000))/25, - (153*\cos(663/400)*\exp(-117/80))/80 -$
 $(6*\exp(-117/80)*\sin(663/400))/25, - (153*\cos(833/500)*\exp(-147/100))/80 -$
 $(6*\exp(-147/100)*\sin(833/500))/25, - (153*\cos(3349/2000)*\exp(-591/400))/80 -$
 $(6*\exp(-591/400)*\sin(3349/2000))/25, - (153*\cos(1683/1000)*\exp(-297/200))/80 -$
 $(6*\exp(-297/200)*\sin(1683/1000))/25, - (153*\cos(3383/2000)*\exp(-597/400))/80 -$
 $(6*\exp(-597/400)*\sin(3383/2000))/25, - (153*\cos(17/10)*\exp(-3/2))/80 - (6*\exp(-$
 $3/2)*\sin(17/10))/25, - (153*\cos(3417/2000)*\exp(-603/400))/80 - (6*\exp(-$
 $603/400)*\sin(3417/2000))/25, - (153*\cos(1717/1000)*\exp(-303/200))/80 -$
 $(6*\exp(-303/200)*\sin(1717/1000))/25, - (153*\cos(3451/2000)*\exp(-609/400))/80 -$
 $(6*\exp(-609/400)*\sin(3451/2000))/25, - (153*\cos(867/500)*\exp(-153/100))/80 -$
 $(6*\exp(-153/100)*\sin(867/500))/25, - (153*\cos(697/400)*\exp(-123/80))/80 -$
 $(6*\exp(-123/80)*\sin(697/400))/25, - (153*\cos(1751/1000)*\exp(-309/200))/80 -$
 $(6*\exp(-309/200)*\sin(1751/1000))/25, - (153*\cos(3519/2000)*\exp(-621/400))/80 -$

$(6*\exp(-621/400)*\sin(3519/2000))/25, - (153*\cos(221/125)*\exp(-39/25))/80 -$
 $(6*\exp(-39/25)*\sin(221/125))/25, - (153*\cos(3553/2000)*\exp(-627/400))/80 -$
 $(6*\exp(-627/400)*\sin(3553/2000))/25, - (153*\cos(357/200)*\exp(-63/40))/80 -$
 $(6*\exp(-63/40)*\sin(357/200))/25, - (153*\cos(3587/2000)*\exp(-633/400))/80 -$
 $(6*\exp(-633/400)*\sin(3587/2000))/25, - (153*\cos(901/500)*\exp(-159/100))/80 -$
 $(6*\exp(-159/100)*\sin(901/500))/25, - (153*\cos(3621/2000)*\exp(-639/400))/80 -$
 $(6*\exp(-639/400)*\sin(3621/2000))/25, - (153*\cos(1819/1000)*\exp(-321/200))/80 -$
 $(6*\exp(-321/200)*\sin(1819/1000))/25, - (153*\cos(731/400)*\exp(-129/80))/80 -$
 $(6*\exp(-129/80)*\sin(731/400))/25, - (153*\cos(459/250)*\exp(-81/50))/80 -$
 $(6*\exp(-81/50)*\sin(459/250))/25, - (153*\cos(3689/2000)*\exp(-651/400))/80 -$
 $(6*\exp(-651/400)*\sin(3689/2000))/25, - (153*\cos(1853/1000)*\exp(-327/200))/80 -$
 $(6*\exp(-327/200)*\sin(1853/1000))/25, - (153*\cos(3723/2000)*\exp(-657/400))/80 -$
 $(6*\exp(-657/400)*\sin(3723/2000))/25, - (153*\cos(187/100)*\exp(-33/20))/80 -$
 $(6*\exp(-33/20)*\sin(187/100))/25, - (153*\cos(3757/2000)*\exp(-663/400))/80 -$
 $(6*\exp(-663/400)*\sin(3757/2000))/25, - (153*\cos(1887/1000)*\exp(-333/200))/80 -$
 $(6*\exp(-333/200)*\sin(1887/1000))/25, - (153*\cos(3791/2000)*\exp(-669/400))/80 -$
 $(6*\exp(-669/400)*\sin(3791/2000))/25, - (153*\cos(238/125)*\exp(-42/25))/80 -$
 $(6*\exp(-42/25)*\sin(238/125))/25, - (153*\cos(153/80)*\exp(-27/16))/80 - (6*\exp(-$
 $27/16)*\sin(153/80))/25, - (153*\cos(1921/1000)*\exp(-339/200))/80 - (6*\exp(-$
 $339/200)*\sin(1921/1000))/25, - (153*\cos(3859/2000)*\exp(-681/400))/80 -$
 $(6*\exp(-681/400)*\sin(3859/2000))/25, - (153*\cos(969/500)*\exp(-171/100))/80 -$
 $(6*\exp(-171/100)*\sin(969/500))/25, - (153*\cos(3893/2000)*\exp(-687/400))/80 -$
 $(6*\exp(-687/400)*\sin(3893/2000))/25, - (153*\cos(391/200)*\exp(-69/40))/80 -$
 $(6*\exp(-69/40)*\sin(391/200))/25, - (153*\cos(3927/2000)*\exp(-693/400))/80 -$
 $(6*\exp(-693/400)*\sin(3927/2000))/25, - (153*\cos(493/250)*\exp(-87/50))/80 -$
 $(6*\exp(-87/50)*\sin(493/250))/25, - (153*\cos(3961/2000)*\exp(-699/400))/80 -$
 $(6*\exp(-699/400)*\sin(3961/2000))/25, - (153*\cos(1989/1000)*\exp(-351/200))/80 -$
 $(6*\exp(-351/200)*\sin(1989/1000))/25, - (153*\cos(799/400)*\exp(-141/80))/80 -$
 $(6*\exp(-141/80)*\sin(799/400))/25, - (153*\cos(1003/500)*\exp(-177/100))/80 -$
 $(6*\exp(-177/100)*\sin(1003/500))/25, - (153*\cos(4029/2000)*\exp(-711/400))/80 -$
 $(6*\exp(-711/400)*\sin(4029/2000))/25, - (153*\cos(2023/1000)*\exp(-357/200))/80 -$
 $(6*\exp(-357/200)*\sin(2023/1000))/25, - (153*\cos(4063/2000)*\exp(-717/400))/80 -$
 $(6*\exp(-717/400)*\sin(4063/2000))/25, - (153*\cos(51/25)*\exp(-9/5))/80 - (6*\exp(-$
 $9/5)*\sin(51/25))/25, - (153*\cos(4097/2000)*\exp(-723/400))/80 - (6*\exp(-$
 $723/400)*\sin(4097/2000))/25, - (153*\cos(2057/1000)*\exp(-363/200))/80 -$

$$\begin{aligned} & (6*\exp(-363/200)*\sin(2057/1000))/25, - (153*\cos(4131/2000)*\exp(-729/400))/80 - \\ & (6*\exp(-729/400)*\sin(4131/2000))/25, - (153*\cos(1037/500)*\exp(-183/100))/80 - \\ & (6*\exp(-183/100)*\sin(1037/500))/25, - (153*\cos(833/400)*\exp(-147/80))/80 - \\ & (6*\exp(-147/80)*\sin(833/400))/25, - (153*\cos(2091/1000)*\exp(-369/200))/80 - \\ & (6*\exp(-369/200)*\sin(2091/1000))/25, - (153*\cos(4199/2000)*\exp(-741/400))/80 - \\ & (6*\exp(-741/400)*\sin(4199/2000))/25, - (153*\cos(527/250)*\exp(-93/50))/80 - \\ & (6*\exp(-93/50)*\sin(527/250))/25, - (153*\cos(4233/2000)*\exp(-747/400))/80 - \\ & (6*\exp(-747/400)*\sin(4233/2000))/25, - (153*\cos(17/8)*\exp(-15/8))/80 - (6*\exp(- \\ & 15/8)*\sin(17/8))/25] \end{aligned}$$

QUESTION 4C

commandwindow

clear

clc

syms x

y=5*(sin(5*x))^5

a=y^2

aint=int(a)

aintd=int(a,0,pi)

aintdd=double(aintd)

p=pi*aintdd

y =

5*sin(5*x)^5

a =

$$25*\sin(5*x)^{10}$$

aint =

$$(1575*x)/256 - (525*\sin(10*x))/512 + (75*\sin(20*x))/256 - (75*\sin(30*x))/1024 + (25*\sin(40*x))/2048 - \sin(50*x)/1024$$

aintd =

$$(1575*\pi)/256$$

aintdd =

$$19.3282$$

p =

$$60.7212$$

