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16ENG04033

ELECT/ELECT

MID SEMESTER TEST

Question 4

- MATLAB code

```
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]
```

```
I=inv(A)
```

```
X=I*B
```

Output obtained

A =

```
0 10 4 -2
-3 -17 1 2
1 1 1 0
8 -34 16 -10
```

B =

```
-4
2
```

6

4

I =

```
-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
```

X =

```
4.0000  
-0.0000  
2.0000  
6.0000
```

- MATLAB code

```
commandwindow  
clear  
clc  
syms t  
d = 1.5*exp(-0.75*t)*sin(0.85*t)+0.375*t  
tn = (0:0.01:2.5)  
V = diff(d)  
A = diff(diff(d))  
yp = subs(V,tn)  
ypn = subs(A,tn)  
figure(1)  
plot(tn,yp,tn,ypn)  
grid on  
grid minor
```

```

xlabel('time')
ylabel('variables')
legend('velocity(km/min)', 'acceleration(km/min^2)')
axis tight

```

output obtian

d =

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

tn =

Columns 1 through 15

	0	0.0100	0.0200	0.0300	0.0400	0.0500
0.0600	0.0700	0.0800	0.0900	0.1000	0.1100	
0.1200	0.1300	0.1400				

Columns 16 through 30

	0.1500	0.1600	0.1700	0.1800	0.1900	0.2000
0.2100	0.2200	0.2300	0.2400	0.2500	0.2600	
0.2700	0.2800	0.2900				

Columns 31 through 45

	0.3000	0.3100	0.3200	0.3300	0.3400	0.3500
0.3600	0.3700	0.3800	0.3900	0.4000	0.4100	
0.4200	0.4300	0.4400				

Columns 46 through 60

	0.4500	0.4600	0.4700	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 75

	0.6000	0.6100	0.6200	0.6300	0.6400	0.6500
0.6600	0.6700	0.6800	0.6900	0.7000	0.7100	
0.7200	0.7300	0.7400				

Columns 76 through 90

0.7500 0.7600 0.7700 0.7800 0.7900 0.8000
0.8100 0.8200 0.8300 0.8400 0.8500 0.8600
0.8700 0.8800 0.8900

Columns 91 through 105

0.9000 0.9100 0.9200 0.9300 0.9400 0.9500
0.9600 0.9700 0.9800 0.9900 1.0000 1.0100
1.0200 1.0300 1.0400

Columns 106 through 120

1.0500 1.0600 1.0700 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 135

1.2000 1.2100 1.2200 1.2300 1.2400 1.2500
1.2600 1.2700 1.2800 1.2900 1.3000 1.3100
1.3200 1.3300 1.3400

Columns 136 through 150

1.3500 1.3600 1.3700 1.3800 1.3900 1.4000
1.4100 1.4200 1.4300 1.4400 1.4500 1.4600
1.4700 1.4800 1.4900

Columns 151 through 165

1.5000 1.5100 1.5200 1.5300 1.5400 1.5500
1.5600 1.5700 1.5800 1.5900 1.6000 1.6100
1.6200 1.6300 1.6400

Columns 166 through 180

1.6500 1.6600 1.6700 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 195

1.8000 1.8100 1.8200 1.8300 1.8400 1.8500
1.8600 1.8700 1.8800 1.8900 1.9000 1.9100
1.9200 1.9300 1.9400

Columns 196 through 210

1.9500 1.9600 1.9700 1.9800 1.9900 2.0000
 2.0100 2.0200 2.0300 2.0400 2.0500 2.0600
 2.0700 2.0800 2.0900

Columns 211 through 225

2.1000 2.1100 2.1200 2.1300 2.1400 2.1500
 2.1600 2.1700 2.1800 2.1900 2.2000 2.2100
 2.2200 2.2300 2.2400

Columns 226 through 240

2.2500 2.2600 2.2700 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

V =

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

A =

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

yp =

$$[33/20, (51*\cos(17/2000)*\exp(-3/400))/40 - (9*\exp(-3/400)*\sin(17/2000))/8 + 3/8, (51*\cos(17/1000)*\exp(-3/200))/40 - (9*\exp(-3/200)*\sin(17/1000))/8 + 3/8, (51*\cos(51/2000)*\exp(-9/400))/40 - (9*\exp(-9/400)*\sin(51/2000))/8 + 3/8, (51*\cos(17/500)*\exp(-3/100))/40 - (9*\exp(-3/100)*\sin(17/500))/8 + 3/8, (51*\cos(17/400)*\exp(-3/80))/40 - (9*\exp(-3/80)*\sin(17/400))/8 + 3/8, (51*\cos(51/1000)*\exp(-9/200))/40 - (9*\exp(-9/200)*\sin(51/1000))/8 + 3/8, (51*\cos(119/2000)*\exp(-21/400))/40 - (9*\exp(-21/400)*\sin(119/2000))/8 + 3/8, (51*\cos(17/250)*\exp(-3/50))/40 - (9*\exp(-3/50)*\sin(17/250))/8 +$$

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

$(51 \cos(187/500) \exp(-33/100))/40 - (9 \exp(-33/100) \sin(187/500))/8 + 3/8,$
 $(51 \cos(153/400) \exp(-27/80))/40 - (9 \exp(-27/80) \sin(153/400))/8 + 3/8,$
 $(51 \cos(391/1000) \exp(-69/200))/40 - (9 \exp(-69/200) \sin(391/1000))/8 + 3/8,$
 $(51 \cos(799/2000) \exp(-141/400))/40 - (9 \exp(-141/400) \sin(799/2000))/8 + 3/8,$
 $(51 \cos(51/125) \exp(-9/25))/40 - (9 \exp(-9/25) \sin(51/125))/8 + 3/8,$
 $(51 \cos(833/2000) \exp(-147/400))/40 - (9 \exp(-147/400) \sin(833/2000))/8 + 3/8,$
 $(51 \cos(17/40) \exp(-3/8))/40 - (9 \exp(-3/8) \sin(17/40))/8 + 3/8,$
 $(51 \cos(867/2000) \exp(-153/400))/40 - (9 \exp(-153/400) \sin(867/2000))/8 + 3/8,$
 $(51 \cos(221/500) \exp(-39/100))/40 - (9 \exp(-39/100) \sin(221/500))/8 + 3/8,$
 $(51 \cos(901/2000) \exp(-159/400))/40 - (9 \exp(-159/400) \sin(901/2000))/8 + 3/8,$
 $(51 \cos(459/1000) \exp(-81/200))/40 - (9 \exp(-81/200) \sin(459/1000))/8 + 3/8,$
 $(51 \cos(187/400) \exp(-33/80))/40 - (9 \exp(-33/80) \sin(187/400))/8 + 3/8,$
 $(51 \cos(119/250) \exp(-21/50))/40 - (9 \exp(-21/50) \sin(119/250))/8 + 3/8,$
 $(51 \cos(969/2000) \exp(-171/400))/40 - (9 \exp(-171/400) \sin(969/2000))/8 + 3/8,$
 $(51 \cos(493/1000) \exp(-87/200))/40 - (9 \exp(-87/200) \sin(493/1000))/8 + 3/8,$
 $(51 \cos(1003/2000) \exp(-177/400))/40 - (9 \exp(-177/400) \sin(1003/2000))/8 + 3/8,$
 $(51 \cos(51/100) \exp(-9/20))/40 - (9 \exp(-9/20) \sin(51/100))/8 + 3/8,$
 $(51 \cos(1037/2000) \exp(-183/400))/40 - (9 \exp(-183/400) \sin(1037/2000))/8 + 3/8,$
 $(51 \cos(527/1000) \exp(-93/200))/40 - (9 \exp(-93/200) \sin(527/1000))/8 + 3/8,$
 $(51 \cos(1071/2000) \exp(-189/400))/40 - (9 \exp(-189/400) \sin(1071/2000))/8 + 3/8,$
 $(51 \cos(68/125) \exp(-12/25))/40 - (9 \exp(-12/25) \sin(68/125))/8 + 3/8,$
 $(51 \cos(221/400) \exp(-39/80))/40 - (9 \exp(-39/80) \sin(221/400))/8 + 3/8,$
 $(51 \cos(561/1000) \exp(-99/200))/40 - (9 \exp(-99/200) \sin(561/1000))/8 + 3/8,$
 $(51 \cos(1139/2000) \exp(-201/400))/40 - (9 \exp(-201/400) \sin(1139/2000))/8 + 3/8,$
 $(51 \cos(289/500) \exp(-51/100))/40 - (9 \exp(-51/100) \sin(289/500))/8 + 3/8,$
 $(51 \cos(1173/2000) \exp(-207/400))/40 - (9 \exp(-207/400) \sin(1173/2000))/8 + 3/8,$
 $(51 \cos(119/200) \exp(-21/40))/40 - (9 \exp(-21/40) \sin(119/200))/8 + 3/8,$
 $(51 \cos(1207/2000) \exp(-213/400))/40 - (9 \exp(-213/400) \sin(1207/2000))/8 + 3/8,$
 $(51 \cos(153/250) \exp(-27/50))/40 - (9 \exp(-27/50) \sin(153/250))/8 + 3/8,$
 $(51 \cos(1241/2000) \exp(-219/400))/40 - (9 \exp(-219/400) \sin(1241/2000))/8 + 3/8,$
 $(51 \cos(629/1000) \exp(-111/200))/40 - (9 \exp(-111/200) \sin(629/1000))/8 + 3/8,$
 $(51 \cos(51/80) \exp(-9/16))/40 - (9 \exp(-9/16) \sin(51/80))/8 + 3/8,$
 $(51 \cos(323/500) \exp(-57/100))/40 - (9 \exp(-57/100) \sin(323/500))/8 + 3/8,$
 $(51 \cos(1309/2000) \exp(-$

$231/400)/40 - (9*\exp(-231/400)*\sin(1309/2000))/8 + 3/8,$
 $(51*\cos(663/1000)*\exp(-117/200))/40 - (9*\exp(-$
 $117/200)*\sin(663/1000))/8 + 3/8, (51*\cos(1343/2000)*\exp(-$
 $237/400))/40 - (9*\exp(-237/400)*\sin(1343/2000))/8 + 3/8,$
 $(51*\cos(17/25)*\exp(-3/5))/40 - (9*\exp(-3/5)*\sin(17/25))/8 + 3/8,$
 $(51*\cos(1377/2000)*\exp(-243/400))/40 - (9*\exp(-$
 $243/400)*\sin(1377/2000))/8 + 3/8, (51*\cos(697/1000)*\exp(-$
 $123/200))/40 - (9*\exp(-123/200)*\sin(697/1000))/8 + 3/8,$
 $(51*\cos(1411/2000)*\exp(-249/400))/40 - (9*\exp(-$
 $249/400)*\sin(1411/2000))/8 + 3/8, (51*\cos(357/500)*\exp(-$
 $63/100))/40 - (9*\exp(-63/100)*\sin(357/500))/8 + 3/8,$
 $(51*\cos(289/400)*\exp(-51/80))/40 - (9*\exp(-$
 $51/80)*\sin(289/400))/8 + 3/8, (51*\cos(731/1000)*\exp(-$
 $129/200))/40 - (9*\exp(-129/200)*\sin(731/1000))/8 + 3/8,$
 $(51*\cos(1479/2000)*\exp(-261/400))/40 - (9*\exp(-$
 $261/400)*\sin(1479/2000))/8 + 3/8, (51*\cos(187/250)*\exp(-$
 $33/50))/40 - (9*\exp(-33/50)*\sin(187/250))/8 + 3/8,$
 $(51*\cos(1513/2000)*\exp(-267/400))/40 - (9*\exp(-$
 $267/400)*\sin(1513/2000))/8 + 3/8, (51*\cos(153/200)*\exp(-$
 $27/40))/40 - (9*\exp(-27/40)*\sin(153/200))/8 + 3/8,$
 $(51*\cos(1547/2000)*\exp(-273/400))/40 - (9*\exp(-$
 $273/400)*\sin(1547/2000))/8 + 3/8, (51*\cos(391/500)*\exp(-$
 $69/100))/40 - (9*\exp(-69/100)*\sin(391/500))/8 + 3/8,$
 $(51*\cos(1581/2000)*\exp(-279/400))/40 - (9*\exp(-$
 $279/400)*\sin(1581/2000))/8 + 3/8, (51*\cos(799/1000)*\exp(-$
 $141/200))/40 - (9*\exp(-141/200)*\sin(799/1000))/8 + 3/8,$
 $(51*\cos(323/400)*\exp(-57/80))/40 - (9*\exp(-$
 $57/80)*\sin(323/400))/8 + 3/8, (51*\cos(102/125)*\exp(-18/25))/40 -$
 $(9*\exp(-18/25)*\sin(102/125))/8 + 3/8, (51*\cos(1649/2000)*\exp(-$
 $291/400))/40 - (9*\exp(-291/400)*\sin(1649/2000))/8 + 3/8,$
 $(51*\cos(833/1000)*\exp(-147/200))/40 - (9*\exp(-$
 $147/200)*\sin(833/1000))/8 + 3/8, (51*\cos(1683/2000)*\exp(-$
 $297/400))/40 - (9*\exp(-297/400)*\sin(1683/2000))/8 + 3/8,$
 $(51*\cos(17/20)*\exp(-3/4))/40 - (9*\exp(-3/4)*\sin(17/20))/8 + 3/8,$
 $(51*\cos(1717/2000)*\exp(-303/400))/40 - (9*\exp(-$
 $303/400)*\sin(1717/2000))/8 + 3/8, (51*\cos(867/1000)*\exp(-$
 $153/200))/40 - (9*\exp(-153/200)*\sin(867/1000))/8 + 3/8,$
 $(51*\cos(1751/2000)*\exp(-309/400))/40 - (9*\exp(-$
 $309/400)*\sin(1751/2000))/8 + 3/8, (51*\cos(221/250)*\exp(-$
 $39/50))/40 - (9*\exp(-39/50)*\sin(221/250))/8 + 3/8,$
 $(51*\cos(357/400)*\exp(-63/80))/40 - (9*\exp(-$
 $63/80)*\sin(357/400))/8 + 3/8, (51*\cos(901/1000)*\exp(-$
 $159/200))/40 - (9*\exp(-159/200)*\sin(901/1000))/8 + 3/8,$
 $(51*\cos(1819/2000)*\exp(-321/400))/40 - (9*\exp(-$
 $321/400)*\sin(1819/2000))/8 + 3/8, (51*\cos(459/500)*\exp(-$
 $81/100))/40 - (9*\exp(-81/100)*\sin(459/500))/8 + 3/8,$
 $(51*\cos(1853/2000)*\exp(-327/400))/40 - (9*\exp(-$

$327/400) * \sin(1853/2000)) / 8 + 3/8, (51 * \cos(187/200) * \exp(-33/40)) / 40 - (9 * \exp(-33/40) * \sin(187/200)) / 8 + 3/8,$
 $(51 * \cos(1887/2000) * \exp(-333/400)) / 40 - (9 * \exp(-333/400) * \sin(1887/2000)) / 8 + 3/8, (51 * \cos(119/125) * \exp(-21/25)) / 40 - (9 * \exp(-21/25) * \sin(119/125)) / 8 + 3/8,$
 $(51 * \cos(1921/2000) * \exp(-339/400)) / 40 - (9 * \exp(-339/400) * \sin(1921/2000)) / 8 + 3/8, (51 * \cos(969/1000) * \exp(-171/200)) / 40 - (9 * \exp(-171/200) * \sin(969/1000)) / 8 + 3/8,$
 $(51 * \cos(391/400) * \exp(-69/80)) / 40 - (9 * \exp(-69/80) * \sin(391/400)) / 8 + 3/8, (51 * \cos(493/500) * \exp(-87/100)) / 40 - (9 * \exp(-87/100) * \sin(493/500)) / 8 + 3/8,$
 $(51 * \cos(1989/2000) * \exp(-351/400)) / 40 - (9 * \exp(-351/400) * \sin(1989/2000)) / 8 + 3/8, (51 * \cos(1003/1000) * \exp(-177/200)) / 40 - (9 * \exp(-177/200) * \sin(1003/1000)) / 8 + 3/8,$
 $(51 * \cos(2023/2000) * \exp(-357/400)) / 40 - (9 * \exp(-357/400) * \sin(2023/2000)) / 8 + 3/8, (51 * \cos(51/50) * \exp(-9/10)) / 40 - (9 * \exp(-9/10) * \sin(51/50)) / 8 + 3/8,$
 $(51 * \cos(2057/2000) * \exp(-363/400)) / 40 - (9 * \exp(-363/400) * \sin(2057/2000)) / 8 + 3/8,$
 $(51 * \cos(1037/1000) * \exp(-183/200)) / 40 - (9 * \exp(-183/200) * \sin(1037/1000)) / 8 + 3/8, (51 * \cos(2091/2000) * \exp(-369/400)) / 40 - (9 * \exp(-369/400) * \sin(2091/2000)) / 8 + 3/8,$
 $(51 * \cos(527/500) * \exp(-93/100)) / 40 - (9 * \exp(-93/100) * \sin(527/500)) / 8 + 3/8, (51 * \cos(17/16) * \exp(-15/16)) / 40 - (9 * \exp(-15/16) * \sin(17/16)) / 8 + 3/8,$
 $(51 * \cos(1071/1000) * \exp(-189/200)) / 40 - (9 * \exp(-189/200) * \sin(1071/1000)) / 8 + 3/8,$
 $(51 * \cos(2159/2000) * \exp(-381/400)) / 40 - (9 * \exp(-381/400) * \sin(2159/2000)) / 8 + 3/8, (51 * \cos(136/125) * \exp(-24/25)) / 40 - (9 * \exp(-24/25) * \sin(136/125)) / 8 + 3/8,$
 $(51 * \cos(2193/2000) * \exp(-387/400)) / 40 - (9 * \exp(-387/400) * \sin(2193/2000)) / 8 + 3/8, (51 * \cos(221/200) * \exp(-39/40)) / 40 - (9 * \exp(-39/40) * \sin(221/200)) / 8 + 3/8,$
 $(51 * \cos(2227/2000) * \exp(-393/400)) / 40 - (9 * \exp(-393/400) * \sin(2227/2000)) / 8 + 3/8, (51 * \cos(561/500) * \exp(-99/100)) / 40 - (9 * \exp(-99/100) * \sin(561/500)) / 8 + 3/8,$
 $(51 * \cos(2261/2000) * \exp(-399/400)) / 40 - (9 * \exp(-399/400) * \sin(2261/2000)) / 8 + 3/8, (51 * \cos(1139/1000) * \exp(-201/200)) / 40 - (9 * \exp(-201/200) * \sin(1139/1000)) / 8 + 3/8,$
 $(51 * \cos(459/400) * \exp(-81/80)) / 40 - (9 * \exp(-81/80) * \sin(459/400)) / 8 + 3/8, (51 * \cos(289/250) * \exp(-51/50)) / 40 - (9 * \exp(-51/50) * \sin(289/250)) / 8 + 3/8,$
 $(51 * \cos(2329/2000) * \exp(-411/400)) / 40 - (9 * \exp(-411/400) * \sin(2329/2000)) / 8 + 3/8,$
 $(51 * \cos(1173/1000) * \exp(-207/200)) / 40 - (9 * \exp(-207/200) * \sin(1173/1000)) / 8 + 3/8, (51 * \cos(2363/2000) * \exp(-417/400)) / 40 - (9 * \exp(-417/400) * \sin(2363/2000)) / 8 + 3/8,$
 $(51 * \cos(119/100) * \exp(-21/20)) / 40 - (9 * \exp(-21/20) * \sin(119/100)) / 8 + 3/8, (51 * \cos(2397/2000) * \exp(-423/400)) / 40 - (9 * \exp(-423/400) * \sin(2397/2000)) / 8 + 3/8,$

$(51 \cdot \cos(1207/1000) \cdot \exp(-213/200))/40 - (9 \cdot \exp(-213/200) \cdot \sin(1207/1000))/8 + 3/8,$
 $(51 \cdot \cos(2431/2000) \cdot \exp(-429/400))/40 - (9 \cdot \exp(-429/400) \cdot \sin(2431/2000))/8 + 3/8,$
 $(51 \cdot \cos(153/125) \cdot \exp(-27/25))/40 - (9 \cdot \exp(-27/25) \cdot \sin(153/125))/8 + 3/8,$
 $(51 \cdot \cos(493/400) \cdot \exp(-87/80))/40 - (9 \cdot \exp(-87/80) \cdot \sin(493/400))/8 + 3/8,$
 $(51 \cdot \cos(1241/1000) \cdot \exp(-219/200))/40 - (9 \cdot \exp(-219/200) \cdot \sin(1241/1000))/8 + 3/8,$
 $(51 \cdot \cos(2499/2000) \cdot \exp(-441/400))/40 - (9 \cdot \exp(-441/400) \cdot \sin(2499/2000))/8 + 3/8,$
 $(51 \cdot \cos(629/500) \cdot \exp(-111/100))/40 - (9 \cdot \exp(-111/100) \cdot \sin(629/500))/8 + 3/8,$
 $(51 \cdot \cos(2533/2000) \cdot \exp(-447/400))/40 - (9 \cdot \exp(-447/400) \cdot \sin(2533/2000))/8 + 3/8,$
 $(51 \cdot \cos(51/40) \cdot \exp(-9/8))/40 - (9 \cdot \exp(-9/8) \cdot \sin(51/40))/8 + 3/8,$
 $(51 \cdot \cos(2567/2000) \cdot \exp(-453/400))/40 - (9 \cdot \exp(-453/400) \cdot \sin(2567/2000))/8 + 3/8,$
 $(51 \cdot \cos(323/250) \cdot \exp(-57/50))/40 - (9 \cdot \exp(-57/50) \cdot \sin(323/250))/8 + 3/8,$
 $(51 \cdot \cos(2601/2000) \cdot \exp(-459/400))/40 - (9 \cdot \exp(-459/400) \cdot \sin(2601/2000))/8 + 3/8,$
 $(51 \cdot \cos(1309/1000) \cdot \exp(-231/200))/40 - (9 \cdot \exp(-231/200) \cdot \sin(1309/1000))/8 + 3/8,$
 $(51 \cdot \cos(527/400) \cdot \exp(-93/80))/40 - (9 \cdot \exp(-93/80) \cdot \sin(527/400))/8 + 3/8,$
 $(51 \cdot \cos(663/500) \cdot \exp(-117/100))/40 - (9 \cdot \exp(-117/100) \cdot \sin(663/500))/8 + 3/8,$
 $(51 \cdot \cos(2669/2000) \cdot \exp(-471/400))/40 - (9 \cdot \exp(-471/400) \cdot \sin(2669/2000))/8 + 3/8,$
 $(51 \cdot \cos(1343/1000) \cdot \exp(-237/200))/40 - (9 \cdot \exp(-237/200) \cdot \sin(1343/1000))/8 + 3/8,$
 $(51 \cdot \cos(2703/2000) \cdot \exp(-477/400))/40 - (9 \cdot \exp(-477/400) \cdot \sin(2703/2000))/8 + 3/8,$
 $(51 \cdot \cos(34/25) \cdot \exp(-6/5))/40 - (9 \cdot \exp(-6/5) \cdot \sin(34/25))/8 + 3/8,$
 $(51 \cdot \cos(2737/2000) \cdot \exp(-483/400))/40 - (9 \cdot \exp(-483/400) \cdot \sin(2737/2000))/8 + 3/8,$
 $(51 \cdot \cos(1377/1000) \cdot \exp(-243/200))/40 - (9 \cdot \exp(-243/200) \cdot \sin(1377/1000))/8 + 3/8,$
 $(51 \cdot \cos(2771/2000) \cdot \exp(-489/400))/40 - (9 \cdot \exp(-489/400) \cdot \sin(2771/2000))/8 + 3/8,$
 $(51 \cdot \cos(697/500) \cdot \exp(-123/100))/40 - (9 \cdot \exp(-123/100) \cdot \sin(697/500))/8 + 3/8,$
 $(51 \cdot \cos(561/400) \cdot \exp(-99/80))/40 - (9 \cdot \exp(-99/80) \cdot \sin(561/400))/8 + 3/8,$
 $(51 \cdot \cos(1411/1000) \cdot \exp(-249/200))/40 - (9 \cdot \exp(-249/200) \cdot \sin(1411/1000))/8 + 3/8,$
 $(51 \cdot \cos(2839/2000) \cdot \exp(-501/400))/40 - (9 \cdot \exp(-501/400) \cdot \sin(2839/2000))/8 + 3/8,$
 $(51 \cdot \cos(357/250) \cdot \exp(-63/50))/40 - (9 \cdot \exp(-63/50) \cdot \sin(357/250))/8 + 3/8,$
 $(51 \cdot \cos(2873/2000) \cdot \exp(-507/400))/40 - (9 \cdot \exp(-507/400) \cdot \sin(2873/2000))/8 + 3/8,$
 $(51 \cdot \cos(289/200) \cdot \exp(-51/40))/40 - (9 \cdot \exp(-51/40) \cdot \sin(289/200))/8 + 3/8,$
 $(51 \cdot \cos(2907/2000) \cdot \exp(-513/400))/40 - (9 \cdot \exp(-513/400) \cdot \sin(2907/2000))/8 + 3/8,$
 $(51 \cdot \cos(731/500) \cdot \exp(-129/100))/40 - (9 \cdot \exp(-129/100) \cdot \sin(731/500))/8 + 3/8,$
 $(51 \cdot \cos(2941/2000) \cdot \exp(-519/400))/40 - (9 \cdot \exp(-519/400) \cdot \sin(2941/2000))/8 + 3/8,$
 $(51 \cdot \cos(1479/1000) \cdot \exp(-$

$261/200)/40 - (9*\exp(-261/200)*\sin(1479/1000))/8 + 3/8,$
 $(51*\cos(119/80)*\exp(-21/16))/40 - (9*\exp(-21/16)*\sin(119/80))/8$
 $+ 3/8, (51*\cos(187/125)*\exp(-33/25))/40 - (9*\exp(-$
 $33/25)*\sin(187/125))/8 + 3/8, (51*\cos(3009/2000)*\exp(-$
 $531/400))/40 - (9*\exp(-531/400)*\sin(3009/2000))/8 + 3/8,$
 $(51*\cos(1513/1000)*\exp(-267/200))/40 - (9*\exp(-$
 $267/200)*\sin(1513/1000))/8 + 3/8, (51*\cos(3043/2000)*\exp(-$
 $537/400))/40 - (9*\exp(-537/400)*\sin(3043/2000))/8 + 3/8,$
 $(51*\cos(153/100)*\exp(-27/20))/40 - (9*\exp(-$
 $27/20)*\sin(153/100))/8 + 3/8, (51*\cos(3077/2000)*\exp(-$
 $543/400))/40 - (9*\exp(-543/400)*\sin(3077/2000))/8 + 3/8,$
 $(51*\cos(1547/1000)*\exp(-273/200))/40 - (9*\exp(-$
 $273/200)*\sin(1547/1000))/8 + 3/8, (51*\cos(3111/2000)*\exp(-$
 $549/400))/40 - (9*\exp(-549/400)*\sin(3111/2000))/8 + 3/8,$
 $(51*\cos(391/250)*\exp(-69/50))/40 - (9*\exp(-$
 $69/50)*\sin(391/250))/8 + 3/8, (51*\cos(629/400)*\exp(-111/80))/40$
 $- (9*\exp(-111/80)*\sin(629/400))/8 + 3/8,$
 $(51*\cos(1581/1000)*\exp(-279/200))/40 - (9*\exp(-$
 $279/200)*\sin(1581/1000))/8 + 3/8, (51*\cos(3179/2000)*\exp(-$
 $561/400))/40 - (9*\exp(-561/400)*\sin(3179/2000))/8 + 3/8,$
 $(51*\cos(799/500)*\exp(-141/100))/40 - (9*\exp(-$
 $141/100)*\sin(799/500))/8 + 3/8, (51*\cos(3213/2000)*\exp(-$
 $567/400))/40 - (9*\exp(-567/400)*\sin(3213/2000))/8 + 3/8,$
 $(51*\cos(323/200)*\exp(-57/40))/40 - (9*\exp(-$
 $57/40)*\sin(323/200))/8 + 3/8, (51*\cos(3247/2000)*\exp(-$
 $573/400))/40 - (9*\exp(-573/400)*\sin(3247/2000))/8 + 3/8,$
 $(51*\cos(204/125)*\exp(-36/25))/40 - (9*\exp(-$
 $36/25)*\sin(204/125))/8 + 3/8, (51*\cos(3281/2000)*\exp(-$
 $579/400))/40 - (9*\exp(-579/400)*\sin(3281/2000))/8 + 3/8,$
 $(51*\cos(1649/1000)*\exp(-291/200))/40 - (9*\exp(-$
 $291/200)*\sin(1649/1000))/8 + 3/8, (51*\cos(663/400)*\exp(-$
 $117/80))/40 - (9*\exp(-117/80)*\sin(663/400))/8 + 3/8,$
 $(51*\cos(833/500)*\exp(-147/100))/40 - (9*\exp(-$
 $147/100)*\sin(833/500))/8 + 3/8, (51*\cos(3349/2000)*\exp(-$
 $591/400))/40 - (9*\exp(-591/400)*\sin(3349/2000))/8 + 3/8,$
 $(51*\cos(1683/1000)*\exp(-297/200))/40 - (9*\exp(-$
 $297/200)*\sin(1683/1000))/8 + 3/8, (51*\cos(3383/2000)*\exp(-$
 $597/400))/40 - (9*\exp(-597/400)*\sin(3383/2000))/8 + 3/8,$
 $(51*\cos(17/10)*\exp(-3/2))/40 - (9*\exp(-3/2)*\sin(17/10))/8 + 3/8,$
 $(51*\cos(3417/2000)*\exp(-603/400))/40 - (9*\exp(-$
 $603/400)*\sin(3417/2000))/8 + 3/8, (51*\cos(1717/1000)*\exp(-$
 $303/200))/40 - (9*\exp(-303/200)*\sin(1717/1000))/8 + 3/8,$
 $(51*\cos(3451/2000)*\exp(-609/400))/40 - (9*\exp(-$
 $609/400)*\sin(3451/2000))/8 + 3/8, (51*\cos(867/500)*\exp(-$
 $153/100))/40 - (9*\exp(-153/100)*\sin(867/500))/8 + 3/8,$
 $(51*\cos(697/400)*\exp(-123/80))/40 - (9*\exp(-$
 $123/80)*\sin(697/400))/8 + 3/8, (51*\cos(1751/1000)*\exp(-$

$309/200)/40 - (9*\exp(-309/200)*\sin(1751/1000))/8 + 3/8,$
 $(51*\cos(3519/2000)*\exp(-621/400))/40 - (9*\exp(-$
 $621/400)*\sin(3519/2000))/8 + 3/8, (51*\cos(221/125)*\exp(-$
 $39/25))/40 - (9*\exp(-39/25)*\sin(221/125))/8 + 3/8,$
 $(51*\cos(3553/2000)*\exp(-627/400))/40 - (9*\exp(-$
 $627/400)*\sin(3553/2000))/8 + 3/8, (51*\cos(357/200)*\exp(-$
 $63/40))/40 - (9*\exp(-63/40)*\sin(357/200))/8 + 3/8,$
 $(51*\cos(3587/2000)*\exp(-633/400))/40 - (9*\exp(-$
 $633/400)*\sin(3587/2000))/8 + 3/8, (51*\cos(901/500)*\exp(-$
 $159/100))/40 - (9*\exp(-159/100)*\sin(901/500))/8 + 3/8,$
 $(51*\cos(3621/2000)*\exp(-639/400))/40 - (9*\exp(-$
 $639/400)*\sin(3621/2000))/8 + 3/8, (51*\cos(1819/1000)*\exp(-$
 $321/200))/40 - (9*\exp(-321/200)*\sin(1819/1000))/8 + 3/8,$
 $(51*\cos(731/400)*\exp(-129/80))/40 - (9*\exp(-$
 $129/80)*\sin(731/400))/8 + 3/8, (51*\cos(459/250)*\exp(-81/50))/40$
 $- (9*\exp(-81/50)*\sin(459/250))/8 + 3/8, (51*\cos(3689/2000)*\exp(-$
 $651/400))/40 - (9*\exp(-651/400)*\sin(3689/2000))/8 + 3/8,$
 $(51*\cos(1853/1000)*\exp(-327/200))/40 - (9*\exp(-$
 $327/200)*\sin(1853/1000))/8 + 3/8, (51*\cos(3723/2000)*\exp(-$
 $657/400))/40 - (9*\exp(-657/400)*\sin(3723/2000))/8 + 3/8,$
 $(51*\cos(187/100)*\exp(-33/20))/40 - (9*\exp(-$
 $33/20)*\sin(187/100))/8 + 3/8, (51*\cos(3757/2000)*\exp(-$
 $663/400))/40 - (9*\exp(-663/400)*\sin(3757/2000))/8 + 3/8,$
 $(51*\cos(1887/1000)*\exp(-333/200))/40 - (9*\exp(-$
 $333/200)*\sin(1887/1000))/8 + 3/8, (51*\cos(3791/2000)*\exp(-$
 $669/400))/40 - (9*\exp(-669/400)*\sin(3791/2000))/8 + 3/8,$
 $(51*\cos(238/125)*\exp(-42/25))/40 - (9*\exp(-$
 $42/25)*\sin(238/125))/8 + 3/8, (51*\cos(153/80)*\exp(-27/16))/40 -$
 $(9*\exp(-27/16)*\sin(153/80))/8 + 3/8, (51*\cos(1921/1000)*\exp(-$
 $339/200))/40 - (9*\exp(-339/200)*\sin(1921/1000))/8 + 3/8,$
 $(51*\cos(3859/2000)*\exp(-681/400))/40 - (9*\exp(-$
 $681/400)*\sin(3859/2000))/8 + 3/8, (51*\cos(969/500)*\exp(-$
 $171/100))/40 - (9*\exp(-171/100)*\sin(969/500))/8 + 3/8,$
 $(51*\cos(3893/2000)*\exp(-687/400))/40 - (9*\exp(-$
 $687/400)*\sin(3893/2000))/8 + 3/8, (51*\cos(391/200)*\exp(-$
 $69/40))/40 - (9*\exp(-69/40)*\sin(391/200))/8 + 3/8,$
 $(51*\cos(3927/2000)*\exp(-693/400))/40 - (9*\exp(-$
 $693/400)*\sin(3927/2000))/8 + 3/8, (51*\cos(493/250)*\exp(-$
 $87/50))/40 - (9*\exp(-87/50)*\sin(493/250))/8 + 3/8,$
 $(51*\cos(3961/2000)*\exp(-699/400))/40 - (9*\exp(-$
 $699/400)*\sin(3961/2000))/8 + 3/8, (51*\cos(1989/1000)*\exp(-$
 $351/200))/40 - (9*\exp(-351/200)*\sin(1989/1000))/8 + 3/8,$
 $(51*\cos(799/400)*\exp(-141/80))/40 - (9*\exp(-$
 $141/80)*\sin(799/400))/8 + 3/8, (51*\cos(1003/500)*\exp(-$
 $177/100))/40 - (9*\exp(-177/100)*\sin(1003/500))/8 + 3/8,$
 $(51*\cos(4029/2000)*\exp(-711/400))/40 - (9*\exp(-$
 $711/400)*\sin(4029/2000))/8 + 3/8, (51*\cos(2023/1000)*\exp(-$

$$\begin{aligned}
& 357/200)/40 - (9*\exp(-357/200)*\sin(2023/1000))/8 + 3/8, \\
& (51*\cos(4063/2000)*\exp(-717/400))/40 - (9*\exp(- \\
& 717/400)*\sin(4063/2000))/8 + 3/8, (51*\cos(51/25)*\exp(-9/5))/40 - \\
& (9*\exp(-9/5)*\sin(51/25))/8 + 3/8, (51*\cos(4097/2000)*\exp(- \\
& 723/400))/40 - (9*\exp(-723/400)*\sin(4097/2000))/8 + 3/8, \\
& (51*\cos(2057/1000)*\exp(-363/200))/40 - (9*\exp(- \\
& 363/200)*\sin(2057/1000))/8 + 3/8, (51*\cos(4131/2000)*\exp(- \\
& 729/400))/40 - (9*\exp(-729/400)*\sin(4131/2000))/8 + 3/8, \\
& (51*\cos(1037/500)*\exp(-183/100))/40 - (9*\exp(- \\
& 183/100)*\sin(1037/500))/8 + 3/8, (51*\cos(833/400)*\exp(- \\
& 147/80))/40 - (9*\exp(-147/80)*\sin(833/400))/8 + 3/8, \\
& (51*\cos(2091/1000)*\exp(-369/200))/40 - (9*\exp(- \\
& 369/200)*\sin(2091/1000))/8 + 3/8, (51*\cos(4199/2000)*\exp(- \\
& 741/400))/40 - (9*\exp(-741/400)*\sin(4199/2000))/8 + 3/8, \\
& (51*\cos(527/250)*\exp(-93/50))/40 - (9*\exp(- \\
& 93/50)*\sin(527/250))/8 + 3/8, (51*\cos(4233/2000)*\exp(- \\
& 747/400))/40 - (9*\exp(-747/400)*\sin(4233/2000))/8 + 3/8, \\
& (51*\cos(17/8)*\exp(-15/8))/40 - (9*\exp(-15/8)*\sin(17/8))/8 + 3/8]
\end{aligned}$$

ypn =

$$\begin{aligned}
& [-153/80, - (153*\cos(17/2000)*\exp(-3/400))/80 - (6*\exp(- \\
& 3/400)*\sin(17/2000))/25, - (153*\cos(17/1000)*\exp(-3/200))/80 - \\
& (6*\exp(-3/200)*\sin(17/1000))/25, - (153*\cos(51/2000)*\exp(- \\
& 9/400))/80 - (6*\exp(-9/400)*\sin(51/2000))/25, - \\
& (153*\cos(17/500)*\exp(-3/100))/80 - (6*\exp(- \\
& 3/100)*\sin(17/500))/25, - (153*\cos(17/400)*\exp(-3/80))/80 - \\
& (6*\exp(-3/80)*\sin(17/400))/25, - (153*\cos(51/1000)*\exp(- \\
& 9/200))/80 - (6*\exp(-9/200)*\sin(51/1000))/25, - \\
& (153*\cos(119/2000)*\exp(-21/400))/80 - (6*\exp(- \\
& 21/400)*\sin(119/2000))/25, - (153*\cos(17/250)*\exp(-3/50))/80 - \\
& (6*\exp(-3/50)*\sin(17/250))/25, - (153*\cos(153/2000)*\exp(- \\
& 27/400))/80 - (6*\exp(-27/400)*\sin(153/2000))/25, - \\
& (153*\cos(17/200)*\exp(-3/40))/80 - (6*\exp(-3/40)*\sin(17/200))/25, \\
& - (153*\cos(187/2000)*\exp(-33/400))/80 - (6*\exp(- \\
& 33/400)*\sin(187/2000))/25, - (153*\cos(51/500)*\exp(-9/100))/80 - \\
& (6*\exp(-9/100)*\sin(51/500))/25, - (153*\cos(221/2000)*\exp(- \\
& 39/400))/80 - (6*\exp(-39/400)*\sin(221/2000))/25, - \\
& (153*\cos(119/1000)*\exp(-21/200))/80 - (6*\exp(- \\
& 21/200)*\sin(119/1000))/25, - (153*\cos(51/400)*\exp(-9/80))/80 - \\
& (6*\exp(-9/80)*\sin(51/400))/25, - (153*\cos(17/125)*\exp(-3/25))/80 \\
& - (6*\exp(-3/25)*\sin(17/125))/25, - (153*\cos(289/2000)*\exp(- \\
& 51/400))/80 - (6*\exp(-51/400)*\sin(289/2000))/25, - \\
& (153*\cos(153/1000)*\exp(-27/200))/80 - (6*\exp(- \\
& 27/200)*\sin(153/1000))/25, - (153*\cos(323/2000)*\exp(-57/400))/80 \\
& - (6*\exp(-57/400)*\sin(323/2000))/25, - (153*\cos(17/100)*\exp(-
\end{aligned}$$

$$\begin{aligned}
& 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(-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(-
\end{aligned}$$

$21/50)/80 - (6*\exp(-21/50)*\sin(119/250))/25, -$
 $(153*\cos(969/2000)*\exp(-171/400))/80 - (6*\exp(-$
 $171/400)*\sin(969/2000))/25, - (153*\cos(493/1000)*\exp(-$
 $87/200))/80 - (6*\exp(-87/200)*\sin(493/1000))/25, -$
 $(153*\cos(1003/2000)*\exp(-177/400))/80 - (6*\exp(-$
 $177/400)*\sin(1003/2000))/25, - (153*\cos(51/100)*\exp(-9/20))/80 -$
 $(6*\exp(-9/20)*\sin(51/100))/25, - (153*\cos(1037/2000)*\exp(-$
 $183/400))/80 - (6*\exp(-183/400)*\sin(1037/2000))/25, -$
 $(153*\cos(527/1000)*\exp(-93/200))/80 - (6*\exp(-$
 $93/200)*\sin(527/1000))/25, - (153*\cos(1071/2000)*\exp(-$
 $189/400))/80 - (6*\exp(-189/400)*\sin(1071/2000))/25, -$
 $(153*\cos(68/125)*\exp(-12/25))/80 - (6*\exp(-$
 $12/25)*\sin(68/125))/25, - (153*\cos(221/400)*\exp(-39/80))/80 -$
 $(6*\exp(-39/80)*\sin(221/400))/25, - (153*\cos(561/1000)*\exp(-$
 $99/200))/80 - (6*\exp(-99/200)*\sin(561/1000))/25, -$
 $(153*\cos(1139/2000)*\exp(-201/400))/80 - (6*\exp(-$
 $201/400)*\sin(1139/2000))/25, - (153*\cos(289/500)*\exp(-$
 $51/100))/80 - (6*\exp(-51/100)*\sin(289/500))/25, -$
 $(153*\cos(1173/2000)*\exp(-207/400))/80 - (6*\exp(-$
 $207/400)*\sin(1173/2000))/25, - (153*\cos(119/200)*\exp(-21/40))/80$
 $- (6*\exp(-21/40)*\sin(119/200))/25, - (153*\cos(1207/2000)*\exp(-$
 $213/400))/80 - (6*\exp(-213/400)*\sin(1207/2000))/25, -$
 $(153*\cos(153/250)*\exp(-27/50))/80 - (6*\exp(-$
 $27/50)*\sin(153/250))/25, - (153*\cos(1241/2000)*\exp(-219/400))/80$
 $- (6*\exp(-219/400)*\sin(1241/2000))/25, -$
 $(153*\cos(629/1000)*\exp(-111/200))/80 - (6*\exp(-$
 $111/200)*\sin(629/1000))/25, - (153*\cos(51/80)*\exp(-9/16))/80 -$
 $(6*\exp(-9/16)*\sin(51/80))/25, - (153*\cos(323/500)*\exp(-$
 $57/100))/80 - (6*\exp(-57/100)*\sin(323/500))/25, -$
 $(153*\cos(1309/2000)*\exp(-231/400))/80 - (6*\exp(-$
 $231/400)*\sin(1309/2000))/25, - (153*\cos(663/1000)*\exp(-$
 $117/200))/80 - (6*\exp(-117/200)*\sin(663/1000))/25, -$
 $(153*\cos(1343/2000)*\exp(-237/400))/80 - (6*\exp(-$
 $237/400)*\sin(1343/2000))/25, - (153*\cos(17/25)*\exp(-3/5))/80 -$
 $(6*\exp(-3/5)*\sin(17/25))/25, - (153*\cos(1377/2000)*\exp(-$
 $243/400))/80 - (6*\exp(-243/400)*\sin(1377/2000))/25, -$
 $(153*\cos(697/1000)*\exp(-123/200))/80 - (6*\exp(-$
 $123/200)*\sin(697/1000))/25, - (153*\cos(1411/2000)*\exp(-$
 $249/400))/80 - (6*\exp(-249/400)*\sin(1411/2000))/25, -$
 $(153*\cos(357/500)*\exp(-63/100))/80 - (6*\exp(-$
 $63/100)*\sin(357/500))/25, - (153*\cos(289/400)*\exp(-51/80))/80 -$
 $(6*\exp(-51/80)*\sin(289/400))/25, - (153*\cos(731/1000)*\exp(-$
 $129/200))/80 - (6*\exp(-129/200)*\sin(731/1000))/25, -$
 $(153*\cos(1479/2000)*\exp(-261/400))/80 - (6*\exp(-$
 $261/400)*\sin(1479/2000))/25, - (153*\cos(187/250)*\exp(-33/50))/80$
 $- (6*\exp(-33/50)*\sin(187/250))/25, - (153*\cos(1513/2000)*\exp(-$
 $267/400))/80 - (6*\exp(-267/400)*\sin(1513/2000))/25, -$

$(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(-$

$$\begin{aligned}
& 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) * \sin(2329/2000)) / 25, - \\
& (153 * \cos(1173/1000) * \exp(-207/200)) / 80 - (6 * \exp(-207/200) * \sin(1173/1000)) / 25, - (153 * \cos(2363/2000) * \exp(-417/400)) / 80 - (6 * \exp(-417/400) * \sin(2363/2000)) / 25, - \\
& (153 * \cos(119/100) * \exp(-21/20)) / 80 - (6 * \exp(-21/20) * \sin(119/100)) / 25, - (153 * \cos(2397/2000) * \exp(-423/400)) / 80 - (6 * \exp(-423/400) * \sin(2397/2000)) / 25, - \\
& (153 * \cos(1207/1000) * \exp(-213/200)) / 80 - (6 * \exp(-213/200) * \sin(1207/1000)) / 25, - (153 * \cos(2431/2000) * \exp(-429/400)) / 80 - (6 * \exp(-429/400) * \sin(2431/2000)) / 25, - \\
& (153 * \cos(153/125) * \exp(-27/25)) / 80 - (6 * \exp(-27/25) * \sin(153/125)) / 25, - (153 * \cos(493/400) * \exp(-87/80)) / 80 - (6 * \exp(-87/80) * \sin(493/400)) / 25, - (153 * \cos(1241/1000) * \exp(-219/200)) / 80 - (6 * \exp(-219/200) * \sin(1241/1000)) / 25, - \\
& (153 * \cos(2499/2000) * \exp(-441/400)) / 80 - (6 * \exp(-441/400) * \sin(2499/2000)) / 25, - (153 * \cos(629/500) * \exp(-111/100)) / 80 - (6 * \exp(-111/100) * \sin(629/500)) / 25, - \\
& (153 * \cos(2533/2000) * \exp(-447/400)) / 80 - (6 * \exp(-447/400) * \sin(2533/2000)) / 25, - (153 * \cos(51/40) * \exp(-9/8)) / 80 - (6 * \exp(-9/8) * \sin(51/40)) / 25, - (153 * \cos(2567/2000) * \exp(-453/400)) / 80 - (6 * \exp(-453/400) * \sin(2567/2000)) / 25, - \\
& (153 * \cos(323/250) * \exp(-57/50)) / 80 - (6 * \exp(-57/50) * \sin(323/250)) / 25, - (153 * \cos(2601/2000) * \exp(-459/400)) / 80 - (6 * \exp(-459/400) * \sin(2601/2000)) / 25, - \\
& (153 * \cos(1309/1000) * \exp(-231/200)) / 80 - (6 * \exp(-231/200) * \sin(1309/1000)) / 25, - (153 * \cos(527/400) * \exp(-93/80)) / 80 - (6 * \exp(-93/80) * \sin(527/400)) / 25, - (153 * \cos(663/500) * \exp(-117/100)) / 80 - (6 * \exp(-117/100) * \sin(663/500)) / 25, -
\end{aligned}$$

$(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 \cdot \exp(-129/100) \cdot \sin(731/500))/25, - (153 \cdot \cos(2941/2000) \cdot \exp(-519/400))/80 - (6 \cdot \exp(-519/400) \cdot \sin(2941/2000))/25, - (153 \cdot \cos(1479/1000) \cdot \exp(-261/200))/80 - (6 \cdot \exp(-261/200) \cdot \sin(1479/1000))/25, - (153 \cdot \cos(119/80) \cdot \exp(-21/16))/80 - (6 \cdot \exp(-21/16) \cdot \sin(119/80))/25, - (153 \cdot \cos(187/125) \cdot \exp(-33/25))/80 - (6 \cdot \exp(-33/25) \cdot \sin(187/125))/25, - (153 \cdot \cos(3009/2000) \cdot \exp(-531/400))/80 - (6 \cdot \exp(-531/400) \cdot \sin(3009/2000))/25, - (153 \cdot \cos(1513/1000) \cdot \exp(-267/200))/80 - (6 \cdot \exp(-267/200) \cdot \sin(1513/1000))/25, - (153 \cdot \cos(3043/2000) \cdot \exp(-537/400))/80 - (6 \cdot \exp(-537/400) \cdot \sin(3043/2000))/25, - (153 \cdot \cos(153/100) \cdot \exp(-27/20))/80 - (6 \cdot \exp(-27/20) \cdot \sin(153/100))/25, - (153 \cdot \cos(3077/2000) \cdot \exp(-543/400))/80 - (6 \cdot \exp(-543/400) \cdot \sin(3077/2000))/25, - (153 \cdot \cos(1547/1000) \cdot \exp(-273/200))/80 - (6 \cdot \exp(-273/200) \cdot \sin(1547/1000))/25, - (153 \cdot \cos(3111/2000) \cdot \exp(-549/400))/80 - (6 \cdot \exp(-549/400) \cdot \sin(3111/2000))/25, - (153 \cdot \cos(391/250) \cdot \exp(-69/50))/80 - (6 \cdot \exp(-69/50) \cdot \sin(391/250))/25, - (153 \cdot \cos(629/400) \cdot \exp(-111/80))/80 - (6 \cdot \exp(-111/80) \cdot \sin(629/400))/25, - (153 \cdot \cos(1581/1000) \cdot \exp(-279/200))/80 - (6 \cdot \exp(-279/200) \cdot \sin(1581/1000))/25, - (153 \cdot \cos(3179/2000) \cdot \exp(-561/400))/80 - (6 \cdot \exp(-561/400) \cdot \sin(3179/2000))/25, - (153 \cdot \cos(799/500) \cdot \exp(-141/100))/80 - (6 \cdot \exp(-141/100) \cdot \sin(799/500))/25, - (153 \cdot \cos(3213/2000) \cdot \exp(-567/400))/80 - (6 \cdot \exp(-567/400) \cdot \sin(3213/2000))/25, - (153 \cdot \cos(323/200) \cdot \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(-

$$\begin{aligned}
& 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 - (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}$$

C.

```
commandwindow
clc
clear
syms x
y=5*(sin(5*x))^5
xn=(0)
xnn=(pi)
a=y^2
v=pi*int(a)
b=subs(v,xn)
d=subs(v,xnn)
c=(d-b)
```

ANSWERS...

y =

$5 \sin(5x)^5$

xn =

0

xnn =

3.1416

a =

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

v =

$$\pi \left(\frac{1575x}{256} - \frac{525 \sin(10x)}{512} + \frac{75 \sin(20x)}{256} - \frac{75 \sin(30x)}{1024} + \frac{25 \sin(40x)}{2048} - \frac{\sin(50x)}{1024} \right)$$

b =

0

d =

$$\frac{1575\pi^2}{256}$$

c =

$$\frac{1575\pi^2}{256}$$

>>