

## QUESTION 4

A

```
commandwindow
clear
clc
A = [0 10 4 -2; -3 -17 1 2; 0 1 1 0; 8 -34 16 -10]
B = inv(A)
C = [-4; 2; 6; 4]
D = B*C
```

## OUTPUT

A =

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

B =

-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

C =

-4
2
6
4

D =

4.0000
-0.0000
2.0000
6.0000

## B

```
commandwindow
clear
clc
close all
syms t
d = 1.5*exp(-0.75*t)*sin(0.85*t) + 0.375*t
tn = (0:0.01:2.5)
dn = subs(d, tn)
dp = diff(d)
dl = subs(dp, tn)
figure(1)
plot(tn, dl)
xlabel('time (mins)')
ylabel('velocity (m/s)')
grid on
grid minor

dz = diff(dp)
dzn = subs(dz, tn)
figure(2)
plot(tn, dzn)
xlabel('time (mins)')
ylabel('acceleration (m/s^2)')
grid on
grid minor

figure(3)
plot(tn, dl, tn, dzn)
xlabel('time (mins)')
ylabel('variable')
legend('velocity (m/s)', 'acceleration (m/s^2)')
axis tight
grid on
grid minor
```

## OUTPUT

```
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)*sin(119/500))/2 + 21/200, (3*exp(-
87/400)*sin(493/2000))/2 + 87/800, (3*exp(-9/40)*sin(51/200))/2
+ 9/80, (3*exp(-93/400)*sin(527/2000))/2 + 93/800, (3*exp(-
6/25)*sin(34/125))/2 + 3/25, (3*exp(-99/400)*sin(561/2000))/2 +
99/800, (3*exp(-51/200)*sin(289/1000))/2 + 51/400, (3*exp(-
21/80)*sin(119/400))/2 + 21/160, (3*exp(-27/100)*sin(153/500))/2
+ 27/200, (3*exp(-111/400)*sin(629/2000))/2 + 111/800, (3*exp(-
57/200)*sin(323/1000))/2 + 57/400, (3*exp(-
117/400)*sin(663/2000))/2 + 117/800, (3*exp(-3/10)*sin(17/50))/2
+ 3/20, (3*exp(-123/400)*sin(697/2000))/2 + 123/800, (3*exp(-
63/200)*sin(357/1000))/2 + 63/400, (3*exp(-
129/400)*sin(731/2000))/2 + 129/800, (3*exp(-
33/100)*sin(187/500))/2 + 33/200, (3*exp(-27/80)*sin(153/400))/2
```

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



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

dp =

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

d1 =

$$[ 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 -$$

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

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

$147/200) * \sin(833/1000)) / 8 + 3/8,$   $(51 * \cos(1683/2000) * \exp(-297/400)) / 40 - (9 * \exp(-297/400) * \sin(1683/2000)) / 8 + 3/8,$   
 $(51 * \cos(17/20) * \exp(-3/4)) / 40 - (9 * \exp(-3/4) * \sin(17/20)) / 8 + 3/8,$   
 $(51 * \cos(1717/2000) * \exp(-303/400)) / 40 - (9 * \exp(-303/400) * \sin(1717/2000)) / 8 + 3/8,$   $(51 * \cos(867/1000) * \exp(-153/200)) / 40 - (9 * \exp(-153/200) * \sin(867/1000)) / 8 + 3/8,$   
 $(51 * \cos(1751/2000) * \exp(-309/400)) / 40 - (9 * \exp(-309/400) * \sin(1751/2000)) / 8 + 3/8,$   $(51 * \cos(221/250) * \exp(-39/50)) / 40 - (9 * \exp(-39/50) * \sin(221/250)) / 8 + 3/8,$   
 $(51 * \cos(357/400) * \exp(-63/80)) / 40 - (9 * \exp(-63/80) * \sin(357/400)) / 8 + 3/8,$   $(51 * \cos(901/1000) * \exp(-159/200)) / 40 - (9 * \exp(-159/200) * \sin(901/1000)) / 8 + 3/8,$   
 $(51 * \cos(1819/2000) * \exp(-321/400)) / 40 - (9 * \exp(-321/400) * \sin(1819/2000)) / 8 + 3/8,$   $(51 * \cos(459/500) * \exp(-81/100)) / 40 - (9 * \exp(-81/100) * \sin(459/500)) / 8 + 3/8,$   
 $(51 * \cos(1853/2000) * \exp(-327/400)) / 40 - (9 * \exp(-327/400) * \sin(1853/2000)) / 8 + 3/8,$   $(51 * \cos(187/200) * \exp(-33/40)) / 40 - (9 * \exp(-33/40) * \sin(187/200)) / 8 + 3/8,$   
 $(51 * \cos(1887/2000) * \exp(-333/400)) / 40 - (9 * \exp(-333/400) * \sin(1887/2000)) / 8 + 3/8,$   $(51 * \cos(119/125) * \exp(-21/25)) / 40 - (9 * \exp(-21/25) * \sin(119/125)) / 8 + 3/8,$   
 $(51 * \cos(1921/2000) * \exp(-339/400)) / 40 - (9 * \exp(-339/400) * \sin(1921/2000)) / 8 + 3/8,$   $(51 * \cos(969/1000) * \exp(-171/200)) / 40 - (9 * \exp(-171/200) * \sin(969/1000)) / 8 + 3/8,$   
 $(51 * \cos(391/400) * \exp(-69/80)) / 40 - (9 * \exp(-69/80) * \sin(391/400)) / 8 + 3/8,$   $(51 * \cos(493/500) * \exp(-87/100)) / 40 - (9 * \exp(-87/100) * \sin(493/500)) / 8 + 3/8,$   
 $(51 * \cos(1989/2000) * \exp(-351/400)) / 40 - (9 * \exp(-351/400) * \sin(1989/2000)) / 8 + 3/8,$   $(51 * \cos(1003/1000) * \exp(-177/200)) / 40 - (9 * \exp(-177/200) * \sin(1003/1000)) / 8 + 3/8,$   
 $(51 * \cos(2023/2000) * \exp(-357/400)) / 40 - (9 * \exp(-357/400) * \sin(2023/2000)) / 8 + 3/8,$   $(51 * \cos(51/50) * \exp(-9/10)) / 40 - (9 * \exp(-9/10) * \sin(51/50)) / 8 + 3/8,$   $(51 * \cos(2057/2000) * \exp(-363/400)) / 40 - (9 * \exp(-363/400) * \sin(2057/2000)) / 8 + 3/8,$   
 $(51 * \cos(1037/1000) * \exp(-183/200)) / 40 - (9 * \exp(-183/200) * \sin(1037/1000)) / 8 + 3/8,$   $(51 * \cos(2091/2000) * \exp(-369/400)) / 40 - (9 * \exp(-369/400) * \sin(2091/2000)) / 8 + 3/8,$   
 $(51 * \cos(527/500) * \exp(-93/100)) / 40 - (9 * \exp(-93/100) * \sin(527/500)) / 8 + 3/8,$   $(51 * \cos(17/16) * \exp(-15/16)) / 40 - (9 * \exp(-15/16) * \sin(17/16)) / 8 + 3/8,$   $(51 * \cos(1071/1000) * \exp(-189/200)) / 40 - (9 * \exp(-189/200) * \sin(1071/1000)) / 8 + 3/8,$   
 $(51 * \cos(2159/2000) * \exp(-381/400)) / 40 - (9 * \exp(-381/400) * \sin(2159/2000)) / 8 + 3/8,$   $(51 * \cos(136/125) * \exp(-24/25)) / 40 - (9 * \exp(-24/25) * \sin(136/125)) / 8 + 3/8,$   
 $(51 * \cos(2193/2000) * \exp(-387/400)) / 40 - (9 * \exp(-387/400) * \sin(2193/2000)) / 8 + 3/8,$   $(51 * \cos(221/200) * \exp(-39/40)) / 40 - (9 * \exp(-39/40) * \sin(221/200)) / 8 + 3/8,$

$(51 \cos(2227/2000) \exp(-393/400))/40 - (9 \exp(-393/400) \sin(2227/2000))/8 + 3/8,$   
 $(51 \cos(561/500) \exp(-99/100))/40 - (9 \exp(-99/100) \sin(561/500))/8 + 3/8,$   
 $(51 \cos(2261/2000) \exp(-399/400))/40 - (9 \exp(-399/400) \sin(2261/2000))/8 + 3/8,$   
 $(51 \cos(1139/1000) \exp(-201/200))/40 - (9 \exp(-201/200) \sin(1139/1000))/8 + 3/8,$   
 $(51 \cos(459/400) \exp(-81/80))/40 - (9 \exp(-81/80) \sin(459/400))/8 + 3/8,$   
 $(51 \cos(289/250) \exp(-51/50))/40 - (9 \exp(-51/50) \sin(289/250))/8 + 3/8,$   
 $(51 \cos(2329/2000) \exp(-411/400))/40 - (9 \exp(-411/400) \sin(2329/2000))/8 + 3/8,$   
 $(51 \cos(1173/1000) \exp(-207/200))/40 - (9 \exp(-207/200) \sin(1173/1000))/8 + 3/8,$   
 $(51 \cos(2363/2000) \exp(-417/400))/40 - (9 \exp(-417/400) \sin(2363/2000))/8 + 3/8,$   
 $(51 \cos(119/100) \exp(-21/20))/40 - (9 \exp(-21/20) \sin(119/100))/8 + 3/8,$   
 $(51 \cos(2397/2000) \exp(-423/400))/40 - (9 \exp(-423/400) \sin(2397/2000))/8 + 3/8,$   
 $(51 \cos(1207/1000) \exp(-213/200))/40 - (9 \exp(-213/200) \sin(1207/1000))/8 + 3/8,$   
 $(51 \cos(2431/2000) \exp(-429/400))/40 - (9 \exp(-429/400) \sin(2431/2000))/8 + 3/8,$   
 $(51 \cos(153/125) \exp(-27/25))/40 - (9 \exp(-27/25) \sin(153/125))/8 + 3/8,$   
 $(51 \cos(493/400) \exp(-87/80))/40 - (9 \exp(-87/80) \sin(493/400))/8 + 3/8,$   
 $(51 \cos(1241/1000) \exp(-219/200))/40 - (9 \exp(-219/200) \sin(1241/1000))/8 + 3/8,$   
 $(51 \cos(2499/2000) \exp(-441/400))/40 - (9 \exp(-441/400) \sin(2499/2000))/8 + 3/8,$   
 $(51 \cos(629/500) \exp(-111/100))/40 - (9 \exp(-111/100) \sin(629/500))/8 + 3/8,$   
 $(51 \cos(2533/2000) \exp(-447/400))/40 - (9 \exp(-447/400) \sin(2533/2000))/8 + 3/8,$   
 $(51 \cos(51/40) \exp(-9/8))/40 - (9 \exp(-9/8) \sin(51/40))/8 + 3/8,$   
 $(51 \cos(2567/2000) \exp(-453/400))/40 - (9 \exp(-453/400) \sin(2567/2000))/8 + 3/8,$   
 $(51 \cos(323/250) \exp(-57/50))/40 - (9 \exp(-57/50) \sin(323/250))/8 + 3/8,$   
 $(51 \cos(2601/2000) \exp(-459/400))/40 - (9 \exp(-459/400) \sin(2601/2000))/8 + 3/8,$   
 $(51 \cos(1309/1000) \exp(-231/200))/40 - (9 \exp(-231/200) \sin(1309/1000))/8 + 3/8,$   
 $(51 \cos(527/400) \exp(-93/80))/40 - (9 \exp(-93/80) \sin(527/400))/8 + 3/8,$   
 $(51 \cos(663/500) \exp(-117/100))/40 - (9 \exp(-117/100) \sin(663/500))/8 + 3/8,$   
 $(51 \cos(2669/2000) \exp(-471/400))/40 - (9 \exp(-471/400) \sin(2669/2000))/8 + 3/8,$   
 $(51 \cos(1343/1000) \exp(-237/200))/40 - (9 \exp(-237/200) \sin(1343/1000))/8 + 3/8,$   
 $(51 \cos(2703/2000) \exp(-477/400))/40 - (9 \exp(-477/400) \sin(2703/2000))/8 + 3/8,$   
 $(51 \cos(34/25) \exp(-6/5))/40 - (9 \exp(-6/5) \sin(34/25))/8 + 3/8,$   
 $(51 \cos(2737/2000) \exp(-483/400))/40 - (9 \exp(-483/400) \sin(2737/2000))/8 + 3/8,$   
 $(51 \cos(1377/1000) \exp(-243/200))/40 - (9 \exp(-243/200) \sin(1377/1000))/8 + 3/8,$   
 $(51 \cos(2771/2000) \exp(-489/400))/40 - (9 \exp(-$

489/400)\*sin(2771/2000))/8 + 3/8, (51\*cos(697/500)\*exp(-123/100))/40 - (9\*exp(-123/100)\*sin(697/500))/8 + 3/8, (51\*cos(561/400)\*exp(-99/80))/40 - (9\*exp(-99/80)\*sin(561/400))/8 + 3/8, (51\*cos(1411/1000)\*exp(-249/200))/40 - (9\*exp(-249/200)\*sin(1411/1000))/8 + 3/8, (51\*cos(2839/2000)\*exp(-501/400))/40 - (9\*exp(-501/400)\*sin(2839/2000))/8 + 3/8, (51\*cos(357/250)\*exp(-63/50))/40 - (9\*exp(-63/50)\*sin(357/250))/8 + 3/8, (51\*cos(2873/2000)\*exp(-507/400))/40 - (9\*exp(-507/400)\*sin(2873/2000))/8 + 3/8, (51\*cos(289/200)\*exp(-51/40))/40 - (9\*exp(-51/40)\*sin(289/200))/8 + 3/8, (51\*cos(2907/2000)\*exp(-513/400))/40 - (9\*exp(-513/400)\*sin(2907/2000))/8 + 3/8, (51\*cos(731/500)\*exp(-129/100))/40 - (9\*exp(-129/100)\*sin(731/500))/8 + 3/8, (51\*cos(2941/2000)\*exp(-519/400))/40 - (9\*exp(-519/400)\*sin(2941/2000))/8 + 3/8, (51\*cos(1479/1000)\*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(-



$$\begin{aligned}
& 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}$$

dz =

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

dzn =

$$[ -153/80, - (153 * \cos(17/2000) * \exp(-3/400)) / 80 - (6 * \exp(- \\
3/400) * \sin(17/2000)) / 25, - (153 * \cos(17/1000) * \exp(-3/200)) / 80 - \\
(6 * \exp(-3/200) * \sin(17/1000)) / 25, - (153 * \cos(51/2000) * \exp(-$$

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(-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 \cdot \cos(459/500) \cdot \exp(-81/100))/80 - (6 \cdot \exp(-81/100) \cdot \sin(459/500))/25, - (153 \cdot \cos(1853/2000) \cdot \exp(-327/400))/80 - (6 \cdot \exp(-327/400) \cdot \sin(1853/2000))/25, - (153 \cdot \cos(187/200) \cdot \exp(-33/40))/80 - (6 \cdot \exp(-33/40) \cdot \sin(187/200))/25, - (153 \cdot \cos(1887/2000) \cdot \exp(-333/400))/80 - (6 \cdot \exp(-333/400) \cdot \sin(1887/2000))/25, - (153 \cdot \cos(119/125) \cdot \exp(-21/25))/80 - (6 \cdot \exp(-21/25) \cdot \sin(119/125))/25, - (153 \cdot \cos(1921/2000) \cdot \exp(-339/400))/80 - (6 \cdot \exp(-339/400) \cdot \sin(1921/2000))/25, - (153 \cdot \cos(969/1000) \cdot \exp(-171/200))/80 - (6 \cdot \exp(-171/200) \cdot \sin(969/1000))/25, - (153 \cdot \cos(391/400) \cdot \exp(-69/80))/80 - (6 \cdot \exp(-69/80) \cdot \sin(391/400))/25, - (153 \cdot \cos(493/500) \cdot \exp(-87/100))/80 - (6 \cdot \exp(-87/100) \cdot \sin(493/500))/25, - (153 \cdot \cos(1989/2000) \cdot \exp(-351/400))/80 - (6 \cdot \exp(-351/400) \cdot \sin(1989/2000))/25, - (153 \cdot \cos(1003/1000) \cdot \exp(-177/200))/80 - (6 \cdot \exp(-177/200) \cdot \sin(1003/1000))/25, - (153 \cdot \cos(2023/2000) \cdot \exp(-357/400))/80 - (6 \cdot \exp(-357/400) \cdot \sin(2023/2000))/25, - (153 \cdot \cos(51/50) \cdot \exp(-9/10))/80 - (6 \cdot \exp(-9/10) \cdot \sin(51/50))/25, - (153 \cdot \cos(2057/2000) \cdot \exp(-363/400))/80 - (6 \cdot \exp(-363/400) \cdot \sin(2057/2000))/25, - (153 \cdot \cos(1037/1000) \cdot \exp(-183/200))/80 - (6 \cdot \exp(-183/200) \cdot \sin(1037/1000))/25, - (153 \cdot \cos(2091/2000) \cdot \exp(-369/400))/80 - (6 \cdot \exp(-369/400) \cdot \sin(2091/2000))/25, - (153 \cdot \cos(527/500) \cdot \exp(-93/100))/80 - (6 \cdot \exp(-93/100) \cdot \sin(527/500))/25, - (153 \cdot \cos(17/16) \cdot \exp(-15/16))/80 - (6 \cdot \exp(-15/16) \cdot \sin(17/16))/25, - (153 \cdot \cos(1071/1000) \cdot \exp(-189/200))/80 - (6 \cdot \exp(-189/200) \cdot \sin(1071/1000))/25, - (153 \cdot \cos(2159/2000) \cdot \exp(-381/400))/80 - (6 \cdot \exp(-381/400) \cdot \sin(2159/2000))/25, - (153 \cdot \cos(136/125) \cdot \exp(-24/25))/80 - (6 \cdot \exp(-24/25) \cdot \sin(136/125))/25, - (153 \cdot \cos(2193/2000) \cdot \exp(-387/400))/80 - (6 \cdot \exp(-387/400) \cdot \sin(2193/2000))/25, - (153 \cdot \cos(221/200) \cdot \exp(-39/40))/80 - (6 \cdot \exp(-39/40) \cdot \sin(221/200))/25, - (153 \cdot \cos(2227/2000) \cdot \exp(-393/400))/80 - (6 \cdot \exp(-393/400) \cdot \sin(2227/2000))/25, - (153 \cdot \cos(561/500) \cdot \exp(-99/100))/80 - (6 \cdot \exp(-99/100) \cdot \sin(561/500))/25, - (153 \cdot \cos(2261/2000) \cdot \exp(-399/400))/80 - (6 \cdot \exp(-399/400) \cdot \sin(2261/2000))/25, - (153 \cdot \cos(1139/1000) \cdot \exp(-201/200))/80 - (6 \cdot \exp(-201/200) \cdot \sin(1139/1000))/25, - (153 \cdot \cos(459/400) \cdot \exp(-81/80))/80 - (6 \cdot \exp(-81/80) \cdot \sin(459/400))/25, - (153 \cdot \cos(289/250) \cdot \exp(-51/50))/80 - (6 \cdot \exp(-51/50) \cdot \sin(289/250))/25, - (153 \cdot \cos(2329/2000) \cdot \exp(-411/400))/80 - (6 \cdot \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\*exp(-423/400)\*sin(2397/2000))/25, -  
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 (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(-  
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 - (6\*exp(-93/80)\*sin(527/400))/25, - (153\*cos(663/500)\*exp(-  
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 (153\*cos(2669/2000)\*exp(-471/400))/80 - (6\*exp(-  
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 (153\*cos(2703/2000)\*exp(-477/400))/80 - (6\*exp(-  
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 (6\*exp(-6/5)\*sin(34/25))/25, - (153\*cos(2737/2000)\*exp(-  
 483/400))/80 - (6\*exp(-483/400)\*sin(2737/2000))/25, -  
 (153\*cos(1377/1000)\*exp(-243/200))/80 - (6\*exp(-  
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 (153\*cos(697/500)\*exp(-123/100))/80 - (6\*exp(-  
 123/100)\*sin(697/500))/25, - (153\*cos(561/400)\*exp(-99/80))/80 -  
 (6\*exp(-99/80)\*sin(561/400))/25, - (153\*cos(1411/1000)\*exp(-  
 249/200))/80 - (6\*exp(-249/200)\*sin(1411/1000))/25, -  
 (153\*cos(2839/2000)\*exp(-501/400))/80 - (6\*exp(-  
 501/400)\*sin(2839/2000))/25, - (153\*cos(357/250)\*exp(-63/50))/80  
 - (6\*exp(-63/50)\*sin(357/250))/25, - (153\*cos(2873/2000)\*exp(-  
 507/400))/80 - (6\*exp(-507/400)\*sin(2873/2000))/25, -  
 (153\*cos(289/200)\*exp(-51/40))/80 - (6\*exp(-  
 51/40)\*sin(289/200))/25, - (153\*cos(2907/2000)\*exp(-513/400))/80  
 - (6\*exp(-513/400)\*sin(2907/2000))/25, - (153\*cos(731/500)\*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, -

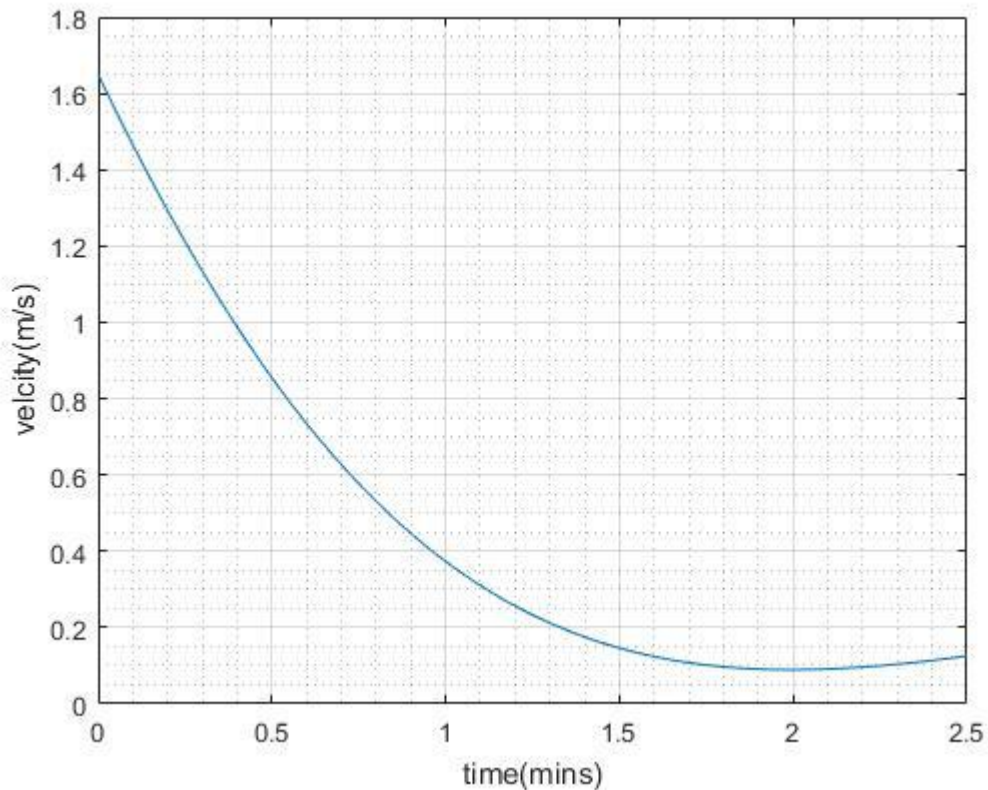
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$621/400) * \sin(3519/2000)) / 25, - (153 * \cos(221/125) * \exp(-39/25)) / 80$   
 $- (6 * \exp(-39/25) * \sin(221/125)) / 25, - (153 * \cos(3553/2000) * \exp(-$   
 $627/400)) / 80 - (6 * \exp(-627/400) * \sin(3553/2000)) / 25, -$   
 $(153 * \cos(357/200)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

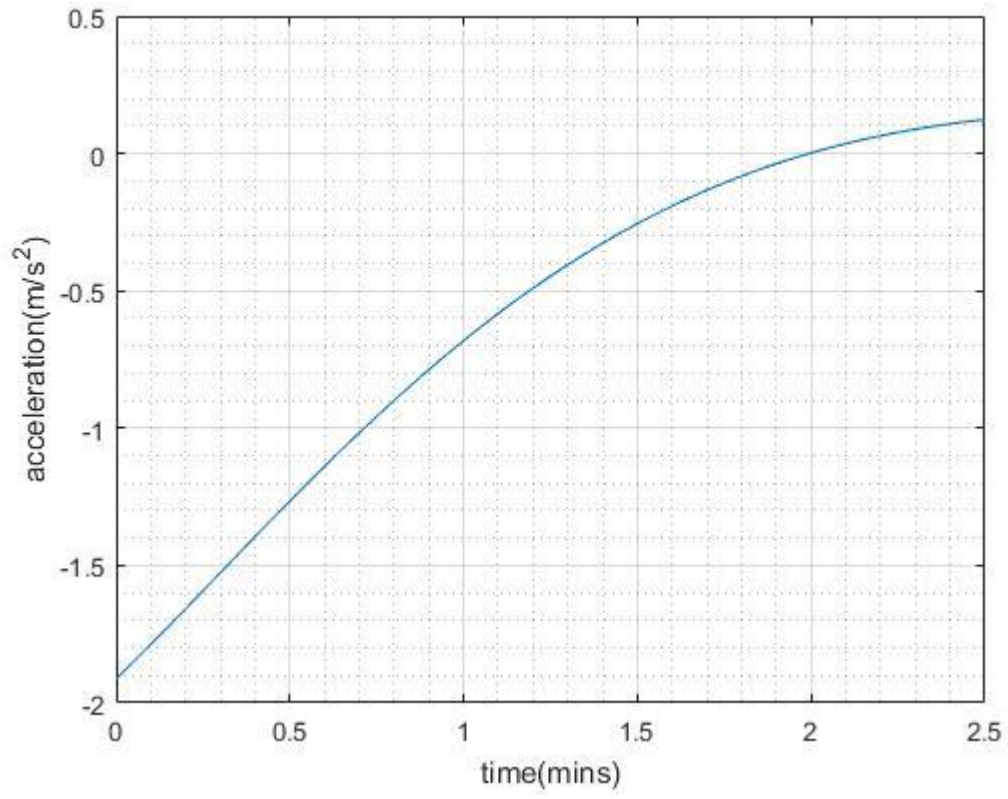


$$\begin{aligned}
 & (153 \cos(4097/2000) \exp(-723/400))/80 - (6 \exp(-723/400) \sin(4097/2000))/25, - \\
 & (153 \cos(2057/1000) \exp(-363/200))/80 - (6 \exp(-363/200) \sin(2057/1000))/25, - \\
 & (153 \cos(4131/2000) \exp(-729/400))/80 - (6 \exp(-729/400) \sin(4131/2000))/25, - \\
 & (153 \cos(1037/500) \exp(-183/100))/80 - (6 \exp(-183/100) \sin(1037/500))/25, - \\
 & (153 \cos(833/400) \exp(-147/80))/80 - (6 \exp(-147/80) \sin(833/400))/25, - \\
 & (153 \cos(2091/1000) \exp(-369/200))/80 - (6 \exp(-369/200) \sin(2091/1000))/25, - \\
 & (153 \cos(4199/2000) \exp(-741/400))/80 - (6 \exp(-741/400) \sin(4199/2000))/25, - \\
 & (153 \cos(527/250) \exp(-93/50))/80 - (6 \exp(-93/50) \sin(527/250))/25, - \\
 & (153 \cos(4233/2000) \exp(-747/400))/80 - (6 \exp(-747/400) \sin(4233/2000))/25, - \\
 & (153 \cos(17/8) \exp(-15/8))/80 - (6 \exp(-15/8) \sin(17/8))/25]
 \end{aligned}$$

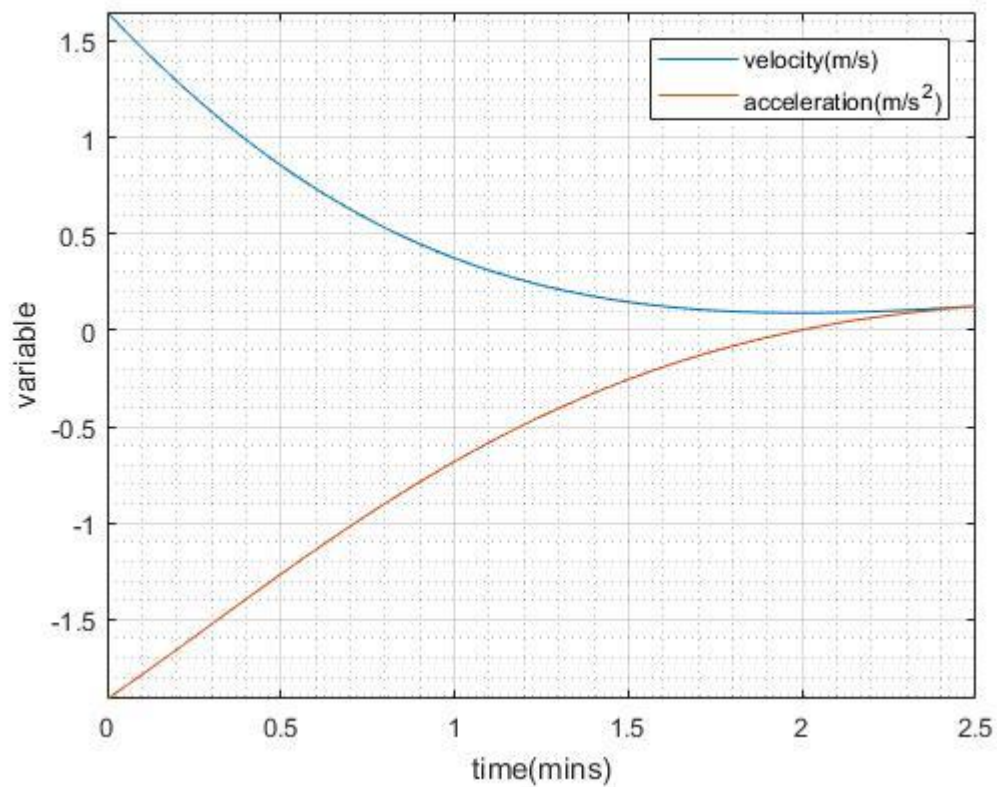
**Figure 1**



**Figure 2**



**Figure 3**



**IC**

```
commandwindow
clear
clc
syms x
y = 5*(sin(5*x))^5
V = 3.142*y^2
D = int(V, 0, 180)
B = double(D)
```

**OUTPUT.**

y =

5\*sin(5\*x)^5

V =

$$(1571 \cdot \sin(5 \cdot x)^{10}) / 20$$

D =

$$(4713 \cdot \sin(3600)) / 5120 - (32991 \cdot \sin(1800)) / 10240 - \\ (4713 \cdot \sin(5400)) / 20480 + (1571 \cdot \sin(7200)) / 40960 - \\ (1571 \cdot \sin(9000)) / 512000 + 890757 / 256$$

B =

$$3.4787e+03$$