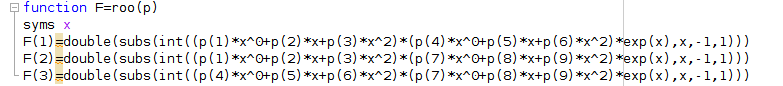
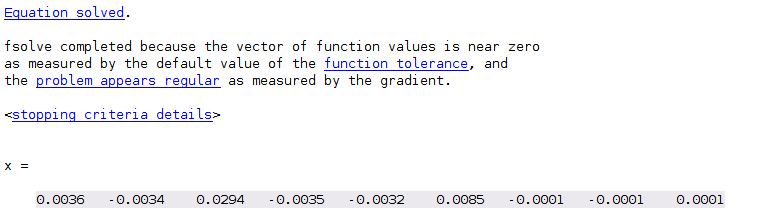
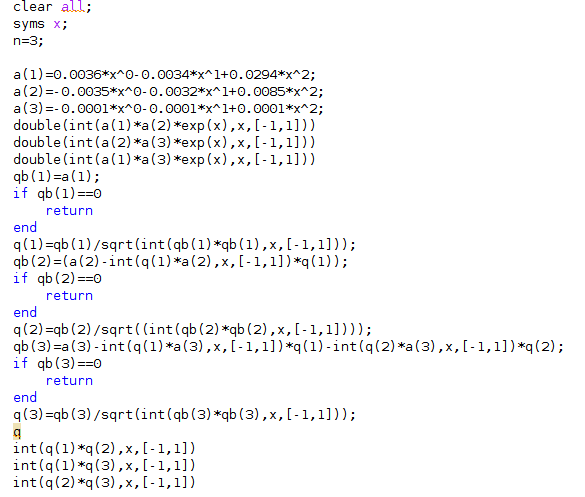
1.Solution1:







check the result：



》homework3\_1

ans =

-5.5904e-07

ans =

4.8577e-07

ans =

-2.6800e-06

q =

[ (1250\*15^(1/2)\*12199^(1/2)\*((147\*x^2)/5000 - (17\*x)/5000 + 9/2500))/12199, -(2500\*73194^(1/2)\*8400539^(1/2)\*((2\*x)/625 - (17\*x^2)/2000 + (317\*15^(1/2)\*12199^(1/2)\*182985^(1/2)\*((147\*x^2)/5000 - (17\*x)/5000 + 9/2500))/892893606 + 7/2000))/8400539, (4000\*25201617^(1/2)\*(x^2/10000 - x/10000 + (317615\*73194^(1/2)\*8400539^(1/2)\*614869051566^(1/2)\*((2\*x)/625 - (17\*x^2)/2000 + (317\*15^(1/2)\*12199^(1/2)\*182985^(1/2)\*((147\*x^2)/5000 - (17\*x)/5000 + 9/2500))/892893606 + 7/2000))/6886975263430925432 + (389\*15^(1/2)\*12199^(1/2)\*182985^(1/2)\*((147\*x^2)/5000 - (17\*x)/5000 + 9/2500))/35715744240 - 1/10000))/449]

ans =

0

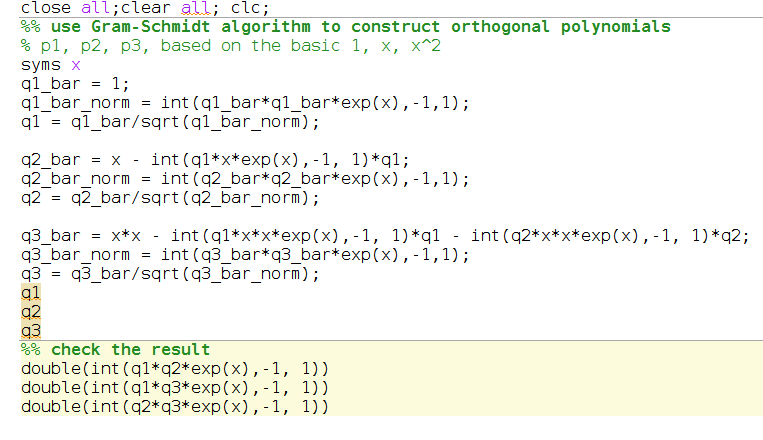
ans =

0

ans =

0

Solution 2:



q1 =

1/(exp(1) - exp(-1))^(1/2)

q2 =

((x + (2\*exp(-1))/(exp(-1) - exp(1)))\*(exp(2) - 1)^(1/2))/(exp(-1)\*(exp(4) - 6\*exp(2) + 1))^(1/2)

q3 =

((x^2 + (exp(-1)\*(exp(2) - 5))/(exp(-1) - exp(1)) + (2\*exp(-1)\*(x + (2\*exp(-1))/(exp(-1) - exp(1)))\*(exp(2) - 1)^(1/2)\*(exp(4) - 8\*exp(2) + 3))/((exp(-1)\*(exp(4) - 6\*exp(2) + 1))^(1/2)\*(exp(-1)\*(exp(2) - 1)\*(exp(4) - 6\*exp(2) + 1))^(1/2)))\*(7\*exp(2) - 7\*exp(4) + exp(6) - 1))/(2\*(-exp(-1)\*(1179\*exp(4) - 257\*exp(2) - 2177\*exp(6) + 1681\*exp(8) - 507\*exp(10) + 65\*exp(12) - 3\*exp(14) + 18\*(exp(2) - 1)^(1/2)\*(exp(4) - 6\*exp(2) + 1)^(1/2)\*(7\*exp(2) - 7\*exp(4) + exp(6) - 1)^(1/2) - 96\*exp(2)\*(exp(2) - 1)^(1/2)\*(exp(4) - 6\*exp(2) + 1)^(1/2)\*(7\*exp(2) - 7\*exp(4) + exp(6) - 1)^(1/2) + 140\*exp(4)\*(exp(2) - 1)^(1/2)\*(exp(4) - 6\*exp(2) + 1)^(1/2)\*(7\*exp(2) - 7\*exp(4) + exp(6) - 1)^(1/2) - 32\*exp(6)\*(exp(2) - 1)^(1/2)\*(exp(4) - 6\*exp(2) + 1)^(1/2)\*(7\*exp(2) - 7\*exp(4) + exp(6) - 1)^(1/2) + 2\*exp(8)\*(exp(2) - 1)^(1/2)\*(exp(4) - 6\*exp(2) + 1)^(1/2)\*(7\*exp(2) - 7\*exp(4) + exp(6) - 1)^(1/2) + 19))^(1/2))

ans =

1.1320e-72

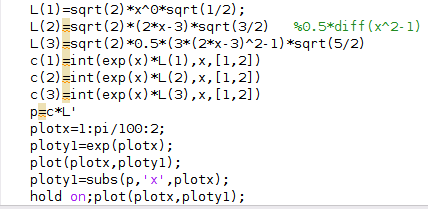
ans =

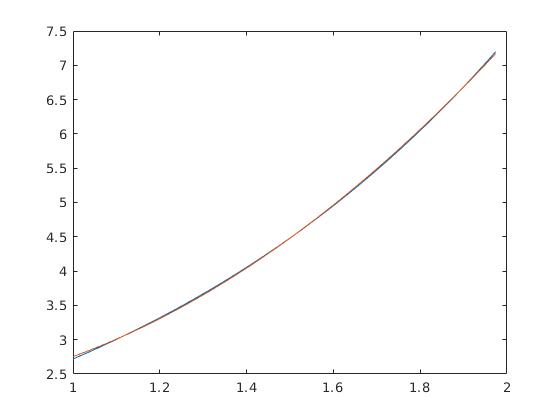
7.2445e-71

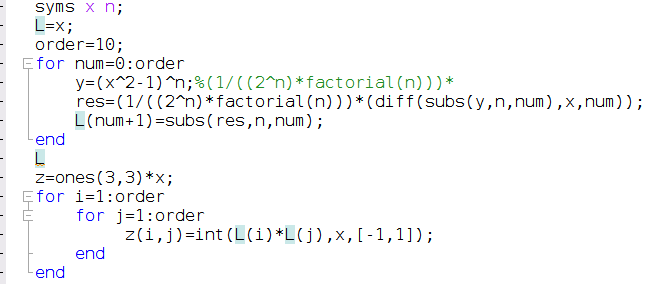
ans =

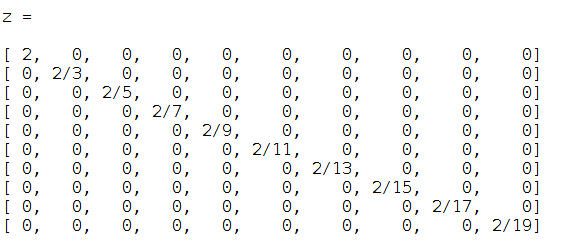
1.1772e-69

2

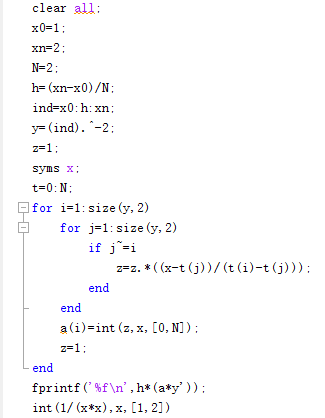
.



3.



4.



n=2: 0.504630

n=3: 0.502188

n=4: 0.500137

1. The above code computes an integral approximation of the form

with and . This approximation corresponds to summed trapezoidal integration rule. Thus, if we run the command

the code would return an approximation of the integral that is obtained by dividing the interval [0, 1] into 10 sub-intervals and using the trapezoidal rule on each of these intervals.

The summed trapezoidal rule returns the integral approximation

This number must be compared with the exact value , which yields the integration error

Thus, we have q = 2