ECOR 2606 Lab Test #3 v1

Submit a single Matlab file (*test3.m*) that answers all of the questions. It may be either a straight script file or a "script" file as you see fit. All required values must be output using *fprintf* and the associated text must clearly identify the value.

1/. An experiment has produced the data shown below for quantities *G* and *H*.

G	1	2	3	4	5	6	7	8
H	1.1	5.9	17.1	33.8	57.2	86	121.2	162.3

According to theory, G and H are related by the following formula:

$$H = aG^2 + bG + c$$

Find the values of *a*, *b*, and *c* that best fit the data.

Produce a plot showing both the data points (use 'x' markers) and the fitted curve.

2/. The table below gives pressure (*P*) versus temperature (*T*) for saturated Refrigerant 22

T	*P*
10.0000	47.5450
30.0000	69.6680
50.0000	98.7920
70.0000	136.1800
90.0000	183.1600

Predict the pressure *P* at temperature *T* = 60 using

(i) polynomial interpolation
(ii) a cubic spline ("not a knot" end condition)

In both cases you should make use of all of the data points.

Produce a plot showing both the data points (use 'x' markers) and the cubic spline..

3/. Evaluate the following integral using i) trapezoidal integration and a step size of 0.5, ii) Simpson's 1/3 rule (same step size), and iii) function *quad*.

$$I = \int_2^{14} 20\sin(x/12)e^{-x/4}dx$$

Assume that 2*x* is in radians.