Assignment 3

1. Evaluate the following integral analytically, by trapezoidal rule and by Simpson's 1/3 rule (take n =4).

$$I = \int_0^3 xe^{2x} dx.$$

2. Evaluate the integral

$$\int_0^{2\pi} \cos^2 x dx$$

using Simpson's 3/8 rule (take $n = 6$).

3. Evaluate

$$\int_0^{0.5} f(x)dx, \text{ if}$$

x	0	0.1	0.2	0.3	0.4	0.5
f(x)	1	7	4	3	5	2

4. Evaluate

$$I = \int_0^{3\pi/2} \sin(5x + 1)dx,$$

using Simpson's 1/3-rule by taking $n = 4$. Find a bound on absolute error.