

**MAT 2384 3X    Assignment # 4**  
**due Wednesday, June 22nd**

Solve the following initial value problems:

1.  $y'' - 4y = 4e^{2x} - 16x + 4, \quad y(0) = 2, \quad y'(0) = 7$
2.  $y'' - 5y' + 6y = 12x^2 - 2x + 7 + 10 \sin x, \quad y(0) = 6, \quad y'(0) = 8$
3.  $y'' + y = \sec x, \quad y(0) = y'(0) = 1$
4.  $x^2 y'' - 2xy' + 2y = x^2, \quad x > 0, \quad y(1) = 2, \quad y'(1) = 0$
5.  $y''' - 4y'' + y' + 6y = 10 \cos x + 18x + 3, \quad y(0) = 5, \quad y'(0) = 17, \quad y''(0) = 33$
6. Use Simpson's Rule with  $2n = 6$  steps to approximate  $\int_0^1 \frac{2}{1+x^2} dx$  to 6 decimal places. Compare your result with the true value by calculating the error.