HOMEWORK #1 (Chapter 1 Review Exercises)

Due on Oct. 5

1) $y = c_1 e^x + c_2 x e^x$ (Problem 5.)

Compute y' and y'' and then combine these results as a linear second-order differential equation that is free of the symbols c_1 and c_2 and has the form $F(y, y', y'') = 0$. The symbols c_1 and c_2 represent constants.

In Problems 2)~4), match each of the given differential equations with one or more of the solutions:

(a) $y = 0$ (b) $y = 2$ (c) $y = 2x$ (d) $y = 2x^2$

2) $xy' = 2y$ (Problem 7.)

3) $y' = 2y - 4$ (Problem 9.)

4) $y'' + 9y = 18$ (Problem 11.)

5) What is the slope of the tangent line to the graph of the solution $y' = 6\sqrt{y} + 5x^3$ that through (-1, 4) ? (Problem 20.)

6) Verify that the indicated function is a particular solution of the given differential equation. Given an interval of definition ***I*** for the solution.

$x^2 y'' + xy' + y = 0;\ \ y = \sin(\ln x)$