

**Quiz 4****Submission Deadline: Tuesday, February 28 by 11:59 p.m.**

*This quiz gives a total of 50 points. For submission instructions, see either the module for Chapter 6/Quiz 4 or the syllabus. Late submissions will receive the grade of zero. Show all your work. No work, no credit.*

1. Find the general solution to the differential equation

(20<sub>p</sub>)

$$y''(x) + y(x) = \sec^3 x.$$

2. Solve the initial value problem

(15<sub>p</sub>)

$$x^2 y''(x) + 7xy'(x) + 5y(x) = 0$$

with the initial conditions:

$$y(1) = -1 \quad \text{and} \quad y'(1) = 13.$$

3. Find the general solution to the differential equation

(15<sub>p</sub>)

$$y^{(6)}(x) - 7y^{(5)}(x) + 48y^{(4)}(x) - 94y'''(x) + 157y''(x) + 777y'(x) - 882y(x) = 0.$$

(Hint:  $e^{2x} \cos(\sqrt{17}x)$  and  $xe^{2x} \sin(\sqrt{17}x)$  are two linearly independent solutions.)