

Fall 2005 Math 152

Week in Review 6

courtesy: Amy Austin

(covering sections 9.1, 9.2)

Section 9.1

1. Solve the equation $\frac{dy}{dx} = \frac{6x^2 - \cos 3x}{2y^2}$
2. Solve $\frac{dy}{dx} = \frac{1+x}{xy}$, $y(1) = -4$
3. Solve $y' = 1 + y^2 - 2x - 2xy^2$, $y(0) = 0$
4. Save the brine problems for section 9.2.

Section 9.2

5. Solve $y' + y = 2e^x$, $y(0) = 4$
6. Solve $\frac{dy}{dx} - \frac{y}{x} = 2$, $y(8) = 2$
7. Solve $y' + 3x^2y = 6x^2$, $y(0) = 3$
8. Solve $x\frac{dy}{dx} + 2y = e^{x^2}$
9. A tank contains 100 liters of pure water. Brine that contains 0.1 kg of salt per liter enters the tank at a rate of 10 liters per minute. The solution is kept mixed and drains from the tank at the same rate. How much salt is in the tank after 6 minutes?
10. A tank contains 2000 liters of water with 5 kg of dissolved salt. Pure water enters the tank at a rate of 10 liters per minute. The solution is kept mixed and drains from the tank at the same rate. How much salt is in the tank after 8 minutes?