

Homework 14

Name:

Date: August 10, 2015

P 1. Solve the differential equation.

$$\frac{dy}{dx} = \frac{-7x^2 - 3x - 8}{(x-1)(x+2)(x^2+1)} \sqrt{y^2+1}$$

P 2. The number of bacteria in a culture is increasing according to the law of exponential growth. There are 125 bacteria in the culture after 2 hours and 350 bacteria after 4 hours.

- (a) Find the initial population.
- (b) Write an exponential growth model for the bacteria population. Let t represent time in hours.
- (c) Use the model to determine the number of bacteria after 8 hours.
- (d) After how many hours will the bacteria count be 25,000?