

Math 274 Quiz 3

Sections: 2.6,3.2,C

17 May 2018

Name: _____
Point values in

boxes

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1.

5

 Use an appropriate substitution to find a general solution to

$$\frac{dy}{dx} = \frac{2y^2 - x^2}{xy}.$$

2. A 100 L tank is initially filled with a sugar water solution with concentration 20 g/L. A solution of concentration 10 g/L flows into the tank at 5 L/min. The tank is well mixed and the resulting mixture flows out at 5 L/min.

- (a)

1

 Sketch a graph of the amount of sugar in the tank (in g) as a function of time.
- (b)

3

 Write an initial value problem, i.e. a differential equation with initial data, to model the amount of sugar in the tank. **Do not solve.**
- (c)

1

 If the mixture flows out at 7 L/min instead of 5 L/min, write an initial value problem to model the amount of sugar in the tank. **Do not solve.**