

### Exam 3 review

Exam 3 will be on Thursday, April 16, and will cover sections 6.7 and 7.1-7.5.  
Review problems:

- Concept check, p. 493 #11, 12ab
- Chapter 6 review, p. 494 #29abc, 31ab
- Chapter 7 review, pp. 551-553 # 1, 2, 3ab, 4ac, 5, 7, 8, 11, 12, 13, 16, 17.

Here are some other problems:

1. Solve the following initial value problems:

- $\frac{dy}{dx} = e^y \sin x, \quad y(0) = 0$
- $x \frac{dy}{dx} = y^2, \quad y(1) = 1$
- $\frac{dy}{dx} = \frac{x}{2y} \sin x, \quad y(0) = 2$

2. Consider the following logistic differential equation:

$$\frac{dP}{dt} = 3P(1 - P/10).$$

What are the equilibrium solutions to this equation? Sketch a direction field for this equation, and on it sketch the solutions with  $P(0) = 2$ ,  $P(0) = 8$ , and  $P(0) = 14$ . Finally use separation of variables to solve the differential equation.