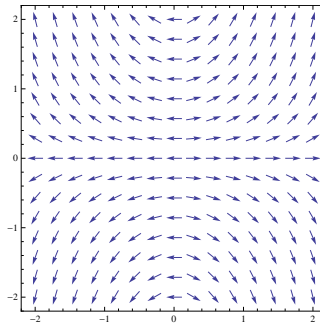


# Quiz 9

Name:

Directions: Answer each question to the best of your ability. You may use a calculator, but you must show all work to receive full credit.

1. Which of the following differential equations will produce the given slope field? (3 pts)



- (a)  $y' = xy$
  - (b)  $y' = \frac{x}{y}$
  - (c)  $y' = \frac{y}{x}$
  - (d)  $y' = x + y$
  - (e) None of the above
2. Using Euler's method, approximate  $y(2)$  using 2 steps given the differential equation  $y' = y - 1$  and the initial condition that  $y(0) = 0$ . (3 pts)

3. What is the actual value of  $y(2)$  from the previous problem? (4 pts)
4. Find the solution to the differential equation,  $y' = -xy$  containing the point  $(0,1)$ . (5 pts)
5. A pot of water at room temperature (70 degrees) is put on a burner that is held at a constant 300 degrees. Using Newton's law and ignoring all other factors such as depth of the water or conductivity of the pan, find the equation for the temperature of the water given that the water boils (212 degrees) 10 minutes after the water is placed on the burner. (5 pts)
6. Given the same set of circumstances, how much time would be necessary to heat the water for hot chocolate (100 degree)? (5 pts)