

Due March 15, 2011

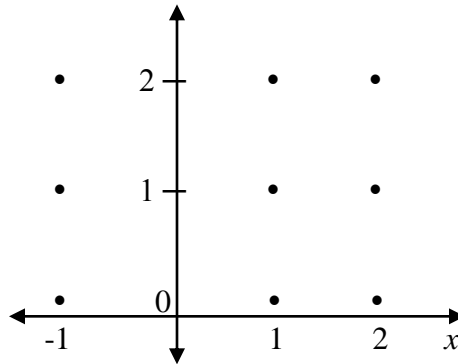
Name \_\_\_\_\_  
3/8/2011

**Problem of the Week #20**  
**Calculus AB**  
**Differential Equations**

Problem taken from the 2008 AP Calculus AB exam.

Consider the differential equation,  $\frac{dy}{dx} = \frac{y-1}{x^2}$ , where  $x \neq 0$ .

- (a) On the axes provided, sketch a slope field for the given differential equation at the nine points indicated.



- (b) Find the particular solution  $y = f(x)$  to the differential equation with the initial condition  $f(2) = 0$ .

- (c) For the particular solution  $y = f(x)$  described in part (b), find  $\lim_{x \rightarrow \infty} f(x)$ .