Differential Equation and Slope Field Quiz

Name: _____

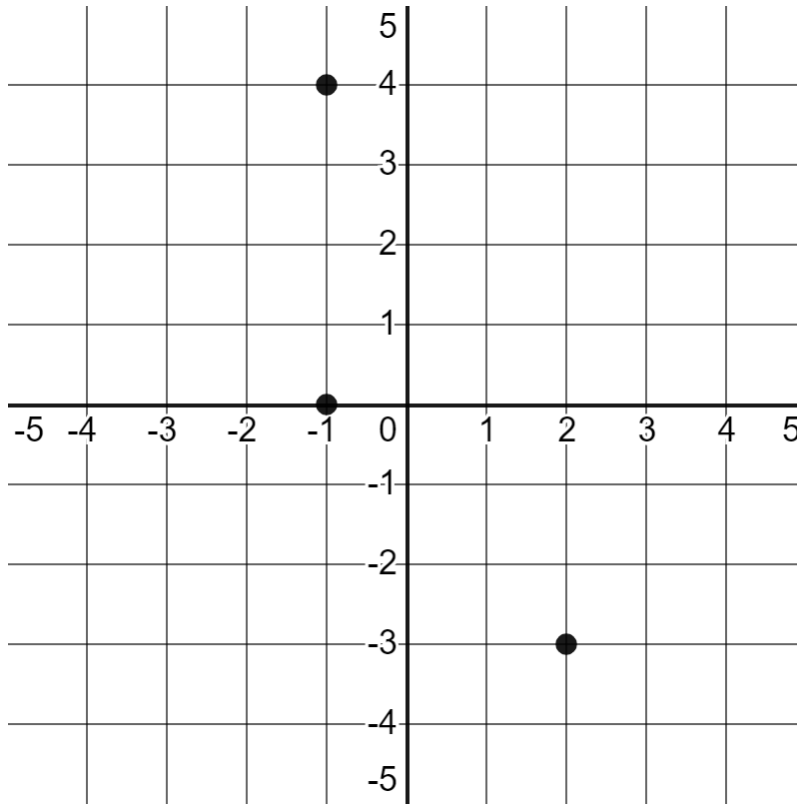1. Solve the differential equations.

   (a) $\dfrac{dy}{dx} = \dfrac{2}{\sqrt{4x+1}} - 1;$ $\qquad y(12) = 1$

   (b) $f'(x) = \dfrac{1}{1-2x} + \dfrac{1}{x^3};$ $\qquad f(1) = -1$

   (c) $\dfrac{dx}{dt} = 7t^{4/3} - e^{-t/2};$ $\qquad x(0) = 1$

2. Sketch the slope field by hand for the differential equation and sketch solution curves that pass through the three indicated points.

$$\frac{dy}{dt} = 0.5(3 - y)(y + 2)$$

3. Use technology (the slope field generator geogebra.org/m/W7dAdgqc) to estimate the value of $y(3)$ if

$$\frac{dy}{dx} = xy + 1; \qquad y(-3) = 0$$