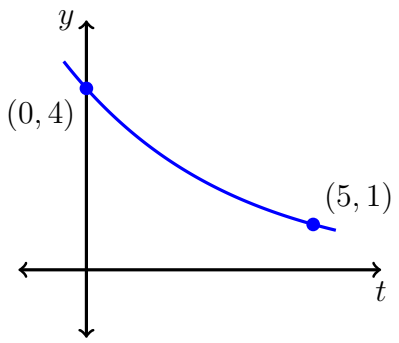
Homework 5 - Math 142 **Name:** _____

1. Find the constants C and k for the exponential function $y = Ce^{kt}$ that passes through the two points shown below.



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2. On midterm 1 we looked at the differential equation $\dfrac{dy}{dx} = 1+2x-y$ with initial condition $y(-1) = 0$, but we never solved it. Use Euler's method to estimate where the solution curve crosses the y-axis using $\Delta x = 0.05$.

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3. Use Euler's method (on a computer) to estimate the x-value where the solution of the differential equation $\dfrac{dy}{dx} = \dfrac{x+y}{x-y}$ with initial condition $y(0) = -1$ crosses the x-axis. Use $\Delta x = 0.01$, and give an answer accurate to two decimal places.
