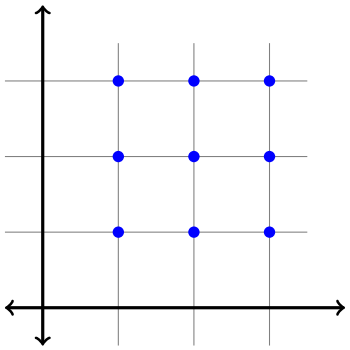
Homework 4 - Math 142 **Name:** _____

1. Use the axes below to sketch a slope field for the differential equation $\frac{dy}{dx} = \frac{y}{x-2}$. Indicate the slopes at the nine points with whole number (x, y)-coordinates from 1 to 3.



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2. Solve the initial value problem $y' = x^2/y$ with initial condition $y(0) = 3$.

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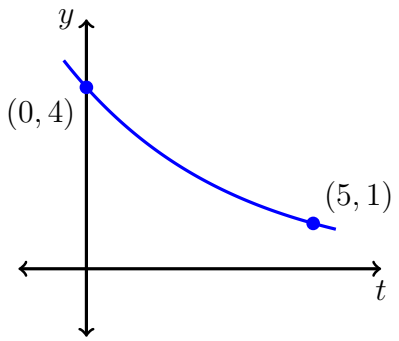
3. Find the constants C and k for the exponential function $y = Ce^{kt}$ that passes through the two points shown below.



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4. Solve the initial value problem $\dfrac{dy}{dt} = y + 5$ with initial condition $y(0) = 2$.

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5. Solve $x^2 + 6y\dfrac{dy}{dx} = 0$.

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6. Find the solution $P(t)$ of the differential equation

$$\frac{dP}{dt} = P^2 \cos t$$

that satisfies the initial condition $P(0) = \frac{1}{2}$.
