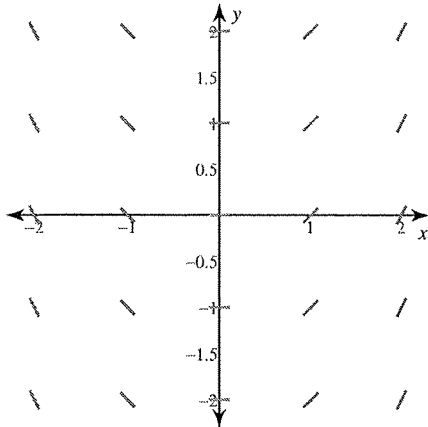


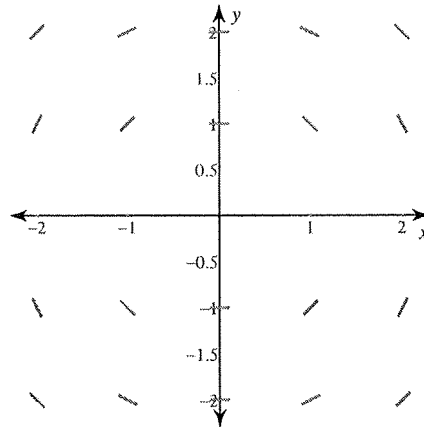
Slope Fields

Sketch the slope field for each differential equation.

1) $\frac{dy}{dx} = x$

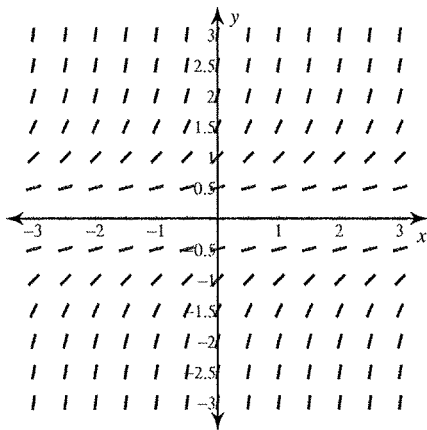


2) $\frac{dy}{dx} = -\frac{x}{y}$



For each problem, find a differential equation that could be represented with the given slope field.

3)



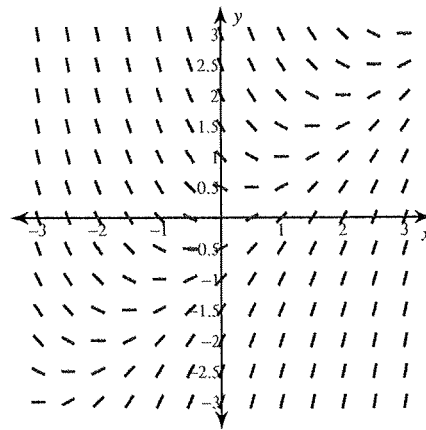
A) $\frac{dy}{dx} = -\frac{1}{x}$

B) $\frac{dy}{dx} = -\frac{1}{y}$

C) $\frac{dy}{dx} = 1$

*D) $\frac{dy}{dx} = y^2$

4)



A) $\frac{dy}{dx} = x + y$

*B) $\frac{dy}{dx} = x - y$

C) $\frac{dy}{dx} = xy$

D) $\frac{dy}{dx} = -xy$

Introduction to Differential Equations

Find the general solution of each differential equation.

$$1) \frac{dy}{dx} = 2x + 2$$

$$y = x^2 + 2x + C$$

$$2) f'(x) = -2x + 1$$

$$f(x) = -x^2 + x + C$$

$$3) \frac{dy}{dx} = -\frac{1}{x^2}$$

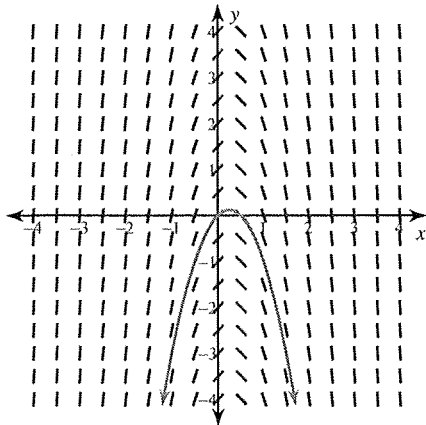
$$y = \frac{1}{x} + C$$

$$4) \frac{dy}{dx} = \frac{1}{(x+3)^2}$$

$$y = -\frac{1}{x+3} + C$$

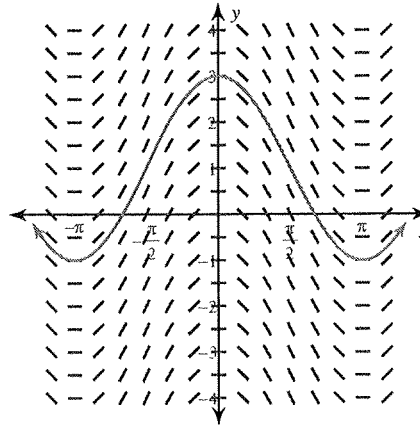
For each problem, find the particular solution of the differential equation that satisfies the initial condition. You may use a graphing calculator to sketch the solution on the provided graph.

$$5) \frac{dy}{dx} = -4x + 1, y(-1) = -3$$



$$y = -2x^2 + x$$

$$6) \frac{dy}{dx} = -2\sin x, y\left(\frac{2\pi}{3}\right) = 0$$



$$y = 2\cos x + 1$$