

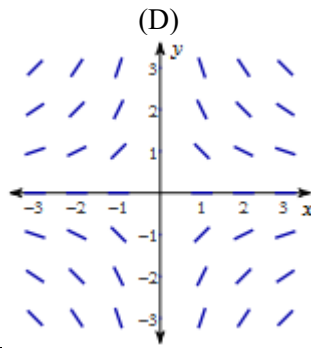
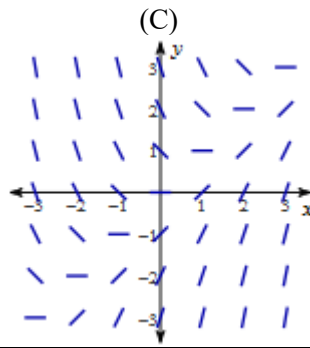
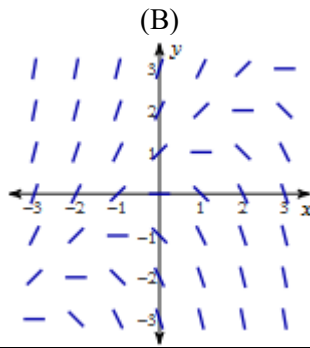
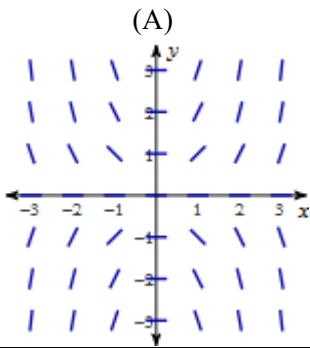
7.4 Reasoning Using Slope Fields

Calculus

Name: _____

Match the slope field with the differential equation.

1. $\frac{dy}{dx} = x - y$



2.

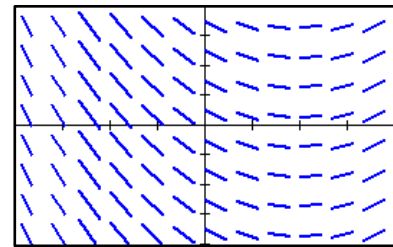
(A) $\frac{dy}{dx} = (x - 2)^2$

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

(B) $\frac{dy}{dx} = 0.5x - 1$

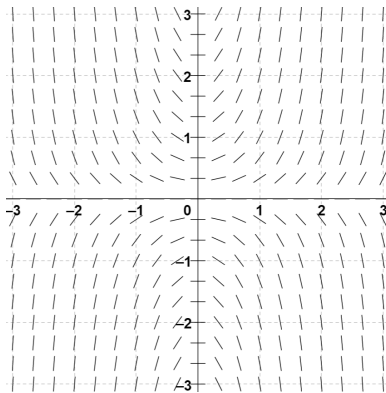
(E) $\frac{dy}{dx} = 0.5y$

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



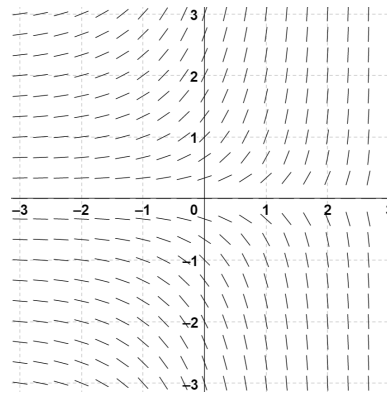
For each slope field, plot and label the points A and B and sketch the particular solution that passes through each of those points. (Two separate solutions for each slope field.)

3. $\frac{dy}{dx} = 2xy$



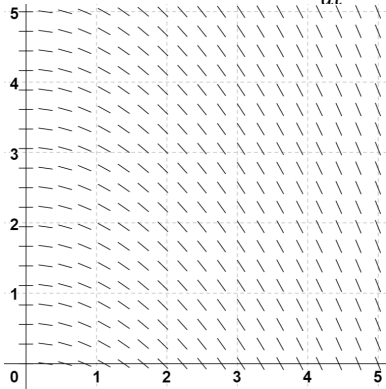
Point A: (0, 1)
Point B: (2, -1)

4. $\frac{dy}{dx} = e^x y$

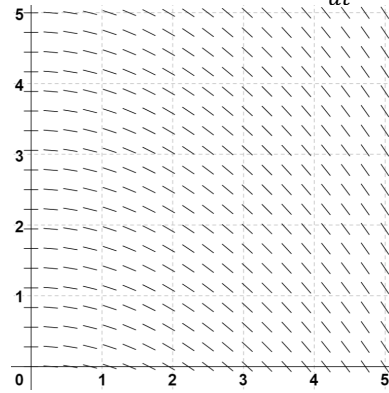


Point A: (2, 1)
Point B: (0, -1)

5. Let $f(t)$ be an increasing, differentiable function. Explain why the following slope field cannot represent the differential equation $\frac{dy}{dt} = f'(t)$

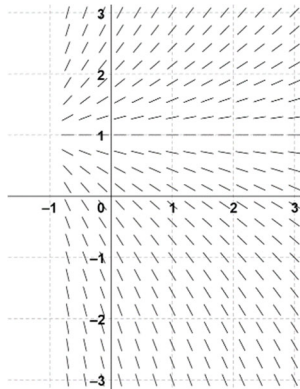


6. Explain why the following slope field cannot represent the differential equation $\frac{dy}{dt} = -0.3y$



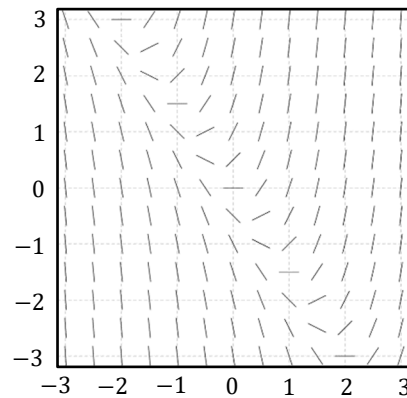
Consider the differential equation and its slope field. Describe all points in the xy -plane that match the given condition.

7. $\frac{dy}{dx} = \frac{y-1}{\sqrt{x+1}}$



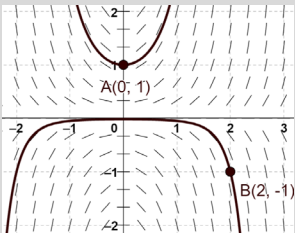
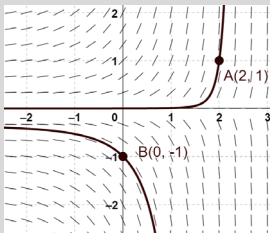
When is $\frac{dy}{dx}$ positive?

8. $\frac{dy}{dx} = 3x + 2y$



When does $\frac{dy}{dx} = -2$?

Answers to 7.4 CA #1

| | | | |
|--|---|---|---|
| <p>1. C 2. B</p> | <p>3. </p> | <p>4. </p> | <p>5. $\frac{dy}{dt} > 0$ when $y > 0$, but the slope field shows line segments with nonpositive slope.</p> |
| <p>6. Possible answer: When $y = 0$, $\frac{dy}{dt} = 0$. However, in the slope field, the slopes of the line segments for $y = 0$ are nonzero.</p> | <p>7. All points where $y > 1$.</p> | <p>8. All points that fall on the line $y = -\frac{3}{2}x - 1$</p> | |