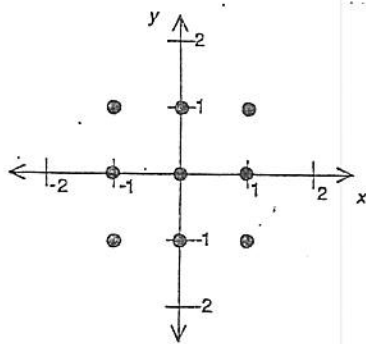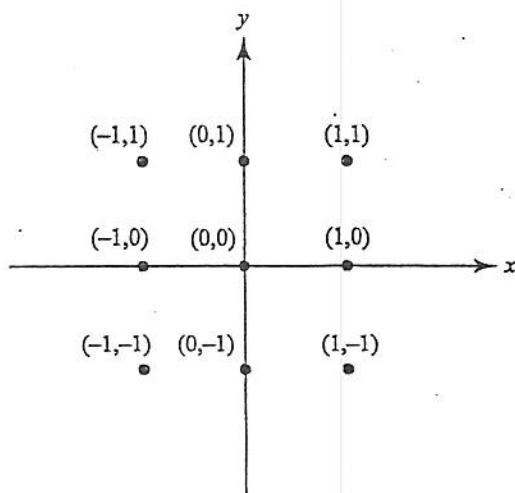Example 1   Sketch a slope field for the differential equation $\dfrac{dy}{dx} = 2x - y$ at the 9 points indicated.

5. Given the differential equation $\dfrac{dy}{dx} = 2x\left(y^2 + 1\right)$

(a) Sketch the slope field for this differential equation at the points shown in the figure.

# Matching Slope Fields with Differential Equations

Look for slopes that:

① = zero

② are along the x-axis (this is when $y = 0$)

③ are along the y-axis (this is when $x = 0$)

④ depend only on an x-value (you see that same slopes vertically – only x changes the slope)

⑤ depend only on a y-value (you see that same slopes horizontally – only y changes the slope)

⑥ are all positive or all negative
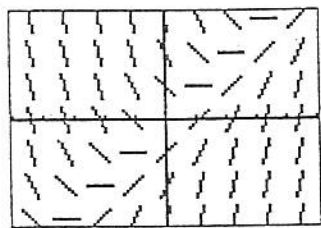
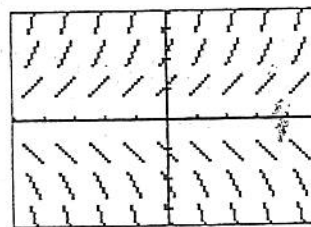Match the slope fields with their differential equations.

(A)
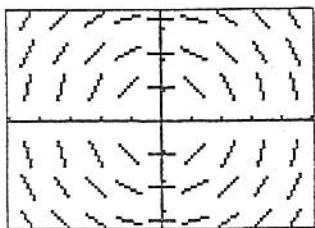
(B)
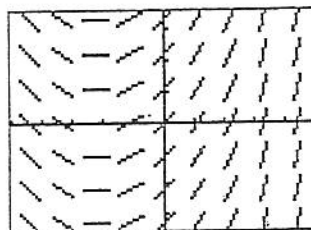
(C)

(D)

15. $\dfrac{dy}{dx} = \dfrac{1}{2}x + 1$

16. $\dfrac{dy}{dx} = y$

17. $\dfrac{dy}{dx} = x - y$

18. $\dfrac{dy}{dx} = -\dfrac{x}{y}$