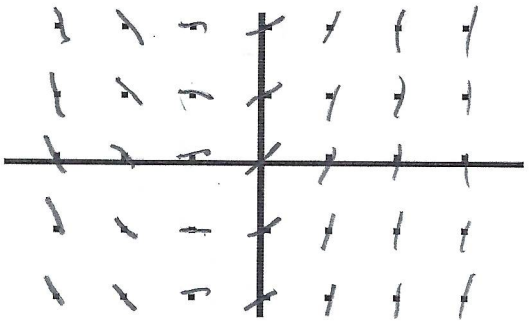
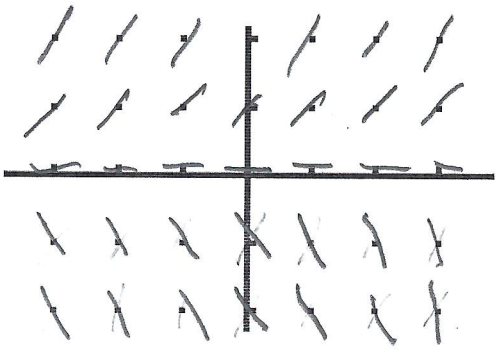
SLOPE FIELDS

Draw a slope field for each of the following differential equations.

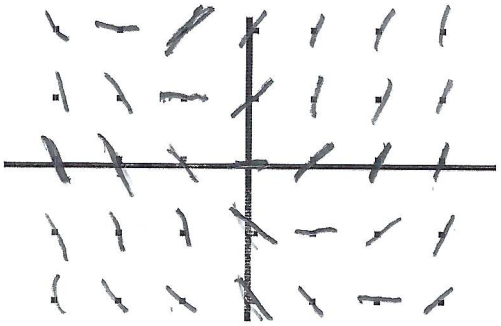
1. $\frac{dy}{dx} = x+1$



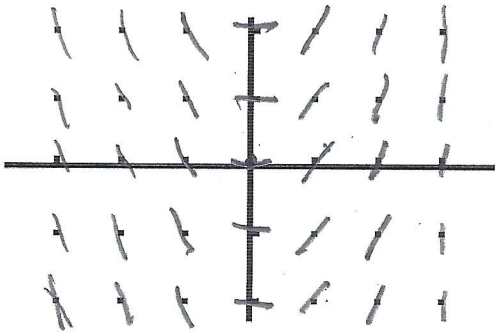
2. $\frac{dy}{dx} = 2y$



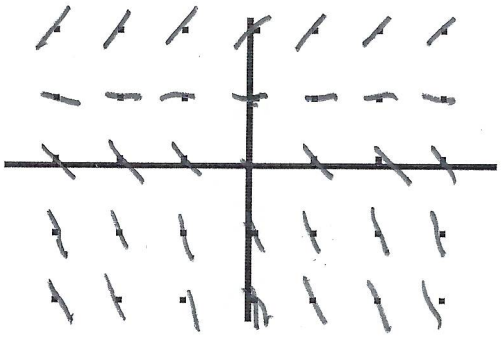
3. $\frac{dy}{dx} = x+y$



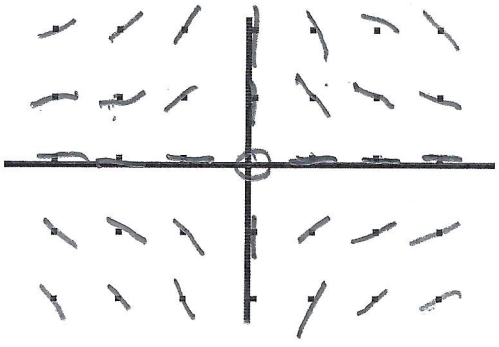
4. $\frac{dy}{dx} = 2x$



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

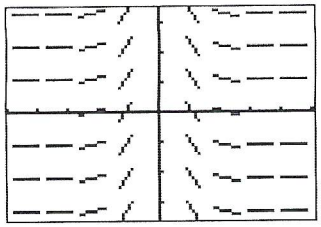


6. $\frac{dy}{dx} = -\frac{y}{x}$

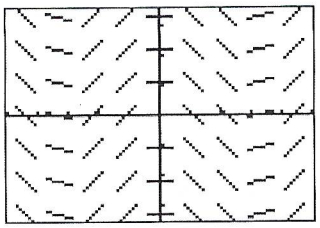


Match each slope field with the equation that the slope field could represent.

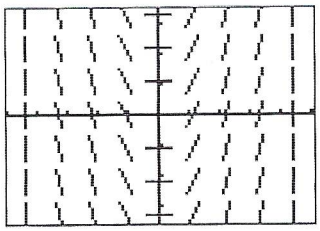
(A)



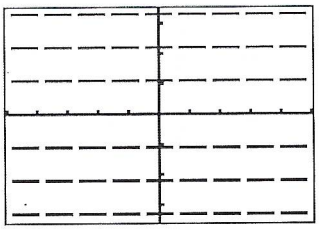
(B)



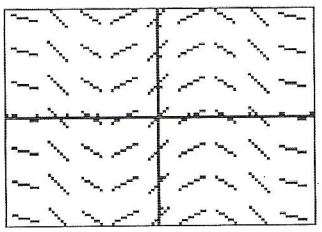
(C)



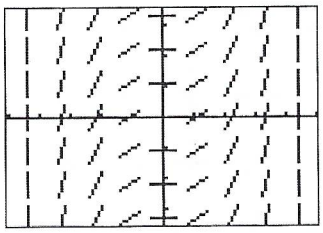
(D)



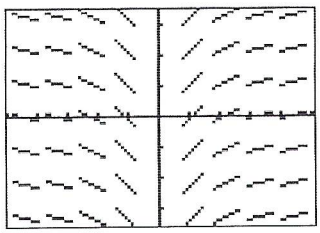
(E)



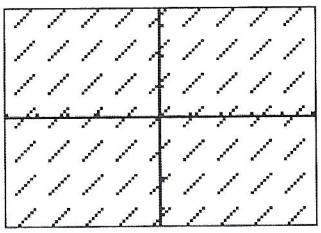
(F)



(G)



(H)



7. $y = 1$ D

8. $y = x$ H

9. $y = x^2$ C

10. $y = \frac{1}{6}x^3$ F

11. $y = \frac{1}{x^2}$ A

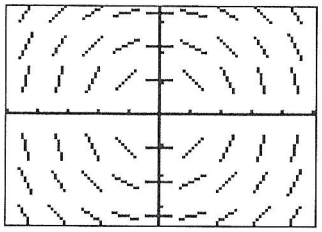
12. $y = \sin x$ E

13. $y = \cos x$ B

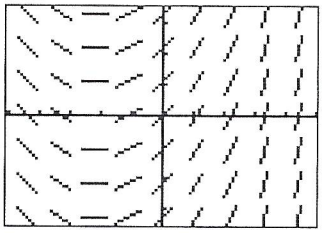
14. $y = \ln|x|$ G

Match the slope fields with their differential equations.

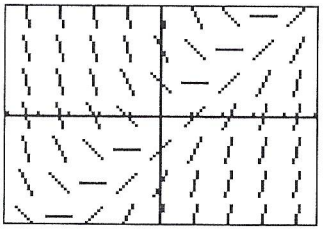
(A)



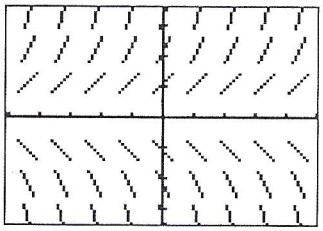
(B)



(C)



(D)



(B) 15. $\frac{dy}{dx} = \frac{1}{2}x + 1$ $y = \frac{x^2}{4} + x + C$

(D) 16. $\frac{dy}{dx} = y$ $\int \frac{dy}{y} = \int dx$ $\ln|y| = x + C$ $|y| = e^{x+C}$

17. $\frac{dy}{dx} = x - y$ Not Separable (C)

18. $\frac{dy}{dx} = -\frac{x}{y}$ $\int y\,dy = -\int x\,dx$ $y^2 = -x^2 + C$ (A)

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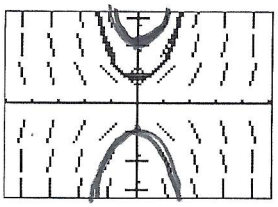
19. The calculator drawn slope field for the differential equation $\frac{dy}{dx} = xy$ is shown in the figure below. The solution curve passing through the point (0, 1) is also shown.

(a) Sketch the solution curve through the point (0, 2).

(b) Sketch the solution curve through the point $(0, -1)$.



$\int \frac{dy}{y} = \int x\,dx$

$\ln|y| = \frac{x^2}{2} + C$

$|y| = Ae^{x^2/2}$

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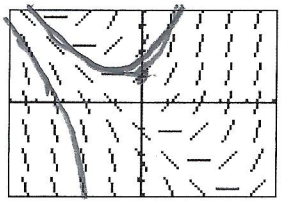
20. The calculator drawn slope field for the differential equation $\frac{dy}{dx} = x + y$ is shown in the figure below.

(a) Sketch the solution curve through the point (0, 1).

(b) Sketch the solution curve through the point $(-3, 0)$.



↑ probably an asymptote for any solution