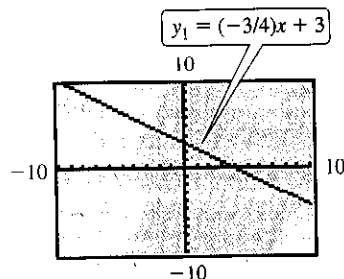
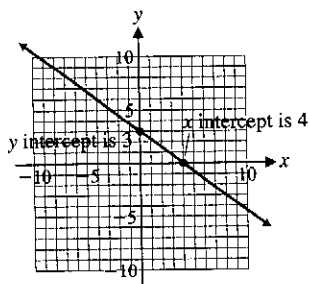


(B) Horizontal line: $y = 2$; Vertical line: $x = -8$

(C)



By hand

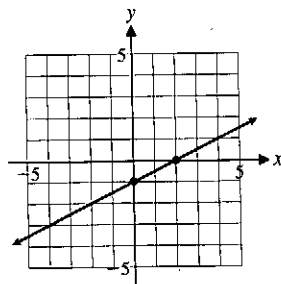
C In graphing utility

3. (A) 0 (B) -4 (C) Not defined (D) 1

4. $y = \frac{1}{2}x - 1$

5. (A) $2x - 3y = 18$ (B) $y = 3x - 9$

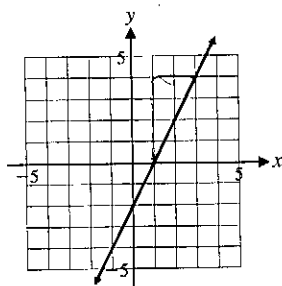
6. (A) $m = 40$ (B) $C = 40x + 250$



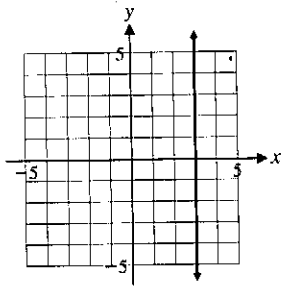
7. $p(x) = -6x + 158$; $p(7) = \$116$; $p(12) = \$86$

EXERCISE 1-3

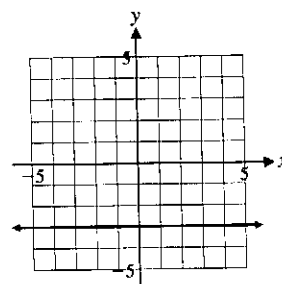
A Problems 1-4 refer to graphs (A)-(D).



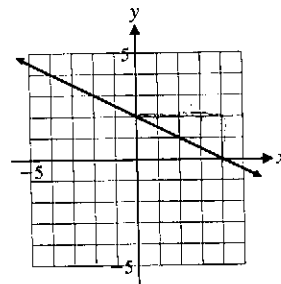
(A)



(B)



(C)



(D)

1. Identify the graph(s) of linear functions with a negative slope.
2. Identify the graph(s) of linear functions with a positive slope.
3. Identify the graph(s) of any constant functions. What is the slope of the graph?
4. Identify any graphs that are not the graphs of functions. What can you say about their slopes?

Sketch a graph of each equation in a rectangular coordinate system.

5. $y = 2x - 3$

6. $y = \frac{x}{2} + 1$

7. $2x + 3y = 12$

8. $8x - 3y = 24$

Find the slope and y intercept of the graph of each equation.

9. $y = 2x - 3$

10. $y = \frac{x}{2} + 1$

11. $y = -\frac{2}{3}x + 2$

12. $y = \frac{3}{4}x - 2$

Write an equation of the line with the indicated slope and y intercept.

13. Slope = -2
y intercept = 4
14. Slope = $-\frac{2}{3}$
y intercept = -2
15. Slope = $-\frac{3}{5}$
y intercept = 3
16. Slope = 1
y intercept = -2

B Sketch a graph of each equation or pair of equations in a rectangular coordinate system.

17. $y = -\frac{2}{3}x - 2$
18. $y = -\frac{3}{2}x + 1$
19. $3x - 2y = 10$
20. $5x - 6y = 15$
21. $x = 3; y = -2$
22. $x = -3; y = 2$



Check your graphs for Problems 17–22 by graphing each in a graphing utility.

In Problems 23–26, find the slope of the graph of each equation. (First write the equation in the form $y = mx + b$.)

23. $3x + y = 5$
24. $2x - y = -3$
25. $2x + 3y = 12$
26. $3x - 2y = 10$

27. (A) Graph $f(x) = 1.2x - 4.2$ in a rectangular coordinate system.

(B) Find the x and y intercepts algebraically to one decimal place.

C (C) Graph $f(x) = 1.2x - 4.2$ in a graphing utility.

C (D) Find the x and y intercepts to one decimal place using trace and zoom or an appropriate built-in routine in your graphing utility.

(E) Using the results of parts (A) and (B) or (C) and (D), find the solution set for the linear inequality

$$1.2x - 4.2 > 0$$

28. (A) Graph $f(x) = -0.8x + 5.2$ in a rectangular coordinate system.

(B) Find the x and y intercepts algebraically to one decimal place.

C (C) Graph $f(x) = -0.8x + 5.2$ in a graphing utility.

C (D) Find the x and y intercepts to one decimal place using trace and zoom or an appropriate built-in routine in your graphing utility.

(E) Using the results of parts (A) and (B) or (C) and (D), find the solution set for the linear inequality

$$-0.8x + 5.2 < 0$$

Write the equations of the vertical and horizontal lines through each point.

29. $(3, -5)$
30. $(-2, 7)$
31. $(-1, -3)$
32. $(96, -4)$

Write the equation of the line through each indicated point with the indicated slope. Write the final answer in the form $y = mx + b$.

33. $m = -3; (4, -1)$
34. $m = -2; (-3, 2)$
35. $m = \frac{2}{3}; (-6, -5)$
36. $m = \frac{1}{2}; (-4, 3)$
37. $m = 0; (3, -5)$
38. $m = 0; (-4, 7)$

Find the slope of the line that passes through the given points.

39. $(1, 3)$ and $(7, 5)$
40. $(2, 1)$ and $(10, 5)$
41. $(-5, -2)$ and $(5, -4)$
42. $(3, 7)$ and $(-6, 4)$
43. $(2, 7)$ and $(2, -3)$
44. $(-2, 3)$ and $(-2, -1)$
45. $(2, 3)$ and $(-5, 3)$
46. $(-3, -3)$ and $(0, -3)$

Write an equation of the line through each indicated pair of points. Write the final answer in the form $Ax + By = C$.

47. $(1, 3)$ and $(7, 5)$
48. $(2, 1)$ and $(10, 5)$
49. $(-5, -2)$ and $(5, -4)$
50. $(3, 7)$ and $(-6, 4)$
51. $(2, 7)$ and $(2, -3)$
52. $(-2, 3)$ and $(-2, -1)$
53. $(2, 3)$ and $(-5, 3)$
54. $(-3, -3)$ and $(0, -3)$

In Problems 55–60, graph the equations obtained from Problems 49–54 and indicate which define a linear function, a constant function, or no function at all.

55. Problem 49
56. Problem 50
57. Problem 51
58. Problem 52
59. Problem 53
60. Problem 54

61. Discuss the relationship among the graphs of the lines with equation $y = mx + 2$, where m is any real number.

62. Discuss the relationship among the graphs of the lines with equation $y = -0.5x + b$, where b is any real number.

C

63. (A) Graph the following equations in the same coordinate system:

$$\begin{array}{ll} 3x + 2y = 6 & 3x + 2y = 3 \\ 3x + 2y = -6 & 3x + 2y = -3 \end{array}$$

(B) From your observations in part (A), describe the family of lines obtained by varying C in $Ax + By = C$ while holding A and B fixed.

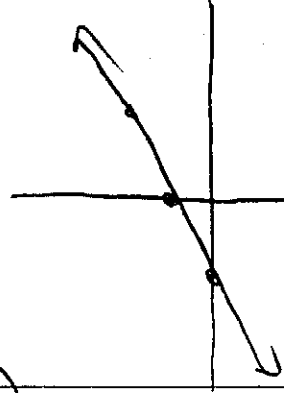
64. (A) Graph the following two equations in the same coordinate system:

$$3x + 4y = 12 \quad 4x - 3y = 12$$

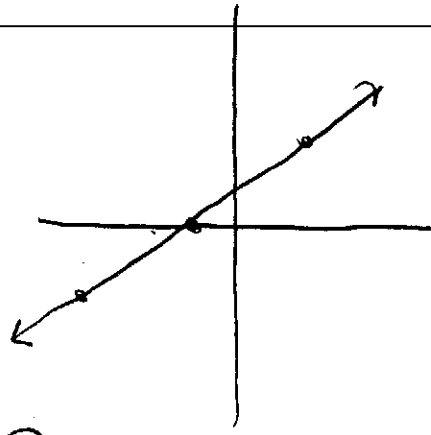
p. 48-49 #1-4, 6-54 (mult 3)

① D ② A ③ C - slope is 0 ④ B - slope is undefined

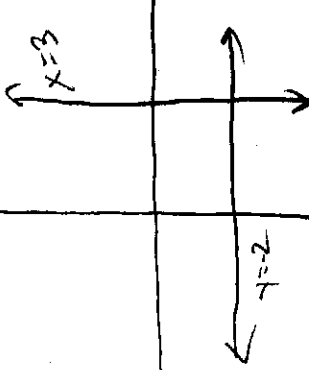
⑥ ⑨ $m=2$ $b=-3$ ⑫ $m=\frac{3}{4}$ $b=-2$ ⑮ $y=-\frac{3}{5}x+3$



⑩ $y=x-2$ ⑬



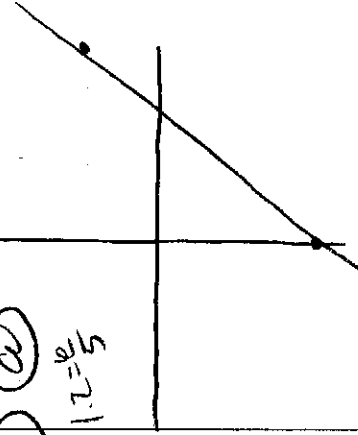
⑭ $2x-y=-3$
 $-y=-2x-3$
 $y=2x+3$
 $m=2$



⑰

⑮ $y=1.2x-4.2$ $0=1.2x-4.2$
 $y=1.2(0)-4.2$ $4.2=1.2x$
 $y=-4.2$ $x=3.5$

⑲ $x=-2$ $y=7$
 $1.2=\frac{6}{5}$



⑳ $x=3.5$ $y=-4.2$ ㉑ $12x-4.2>0$
 $1.2x>4.2$
 $x>3.5$

㉒ $x=-2$ ㉓ $-1=-3(4)+b$ ㉔ $3=-\frac{1}{2}(-4)+b$
 $-1=-12+b$ $3=-2+b$
 $11=b$ $5=b$
 $y=-3x+11$ $y=\frac{1}{2}x+5$

39

$$\frac{5-3}{7-1} = \frac{2}{6} = \boxed{\frac{1}{3}}$$

42

$$\frac{7-4}{3+6} = \frac{3}{9} = \boxed{\frac{1}{3}}$$

45

$$\frac{3-3}{-5-2} = \boxed{0}$$

48

$$\frac{5-1}{10-2} = \frac{4}{8} = \frac{1}{2}$$

51

$$\frac{7+3}{2-2} = \text{undef}$$

$$\frac{54}{0+3} = 0$$

$$\boxed{y = -3}$$

$$5 = \frac{1}{2}(10) + b$$

$$5 = 5 + b$$

$$0 = b$$

$$y = \frac{1}{2}x$$

$$-2\left(-\frac{1}{2}x + y = 0\right)$$

$$\boxed{x - 2y = 0}$$

