

7. Without a calculator, match the following functions to the lines in Figure 1.42:

$$\begin{aligned} f(x) &= 5 + 2x \\ g(x) &= -5 + 2x \\ h(x) &= 5 + 3x \\ j(x) &= 5 - 2x \\ k(x) &= 5 - 3x \end{aligned}$$

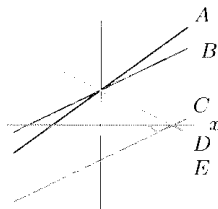


Figure 1.42

8. (a) By hand, graph $y = 3$ and $x = 3$.

- (b) Can the equations in part (a) be written in slope-intercept form?

Are the lines in Exercises 9–14 perpendicular? Parallel? Neither?

9. $y = 5x - 7$; $y = 5x + 8$
 10. $y = 4x + 3$; $y = 13 - \frac{1}{4}x$
 11. $y = 2x + 3$ $y = 2x - 7$
 12. $y = 4x + 7$ $y = \frac{1}{4}x - 2$
 13. $f(q) = 12q + 7$; $g(q) = \frac{1}{12}q + 96$
 14. $2y = 16 - x$; $4y = -8 - 2x$

Problems

15. Line l is given by $y = 3 - \frac{2}{3}x$ and point P has coordinates $(6, 5)$.
- (a) Find the equation of the line containing P and parallel to l .
- (b) Find the equation of the line containing P and perpendicular to l .
- (c) Graph the equations in parts (a) and (b).
16. Using the window $-10 \leq x \leq 10, -10 \leq y \leq 10$, graph $y = x, y = 10x, y = 100x$, and $y = 1000x$.
- (a) Explain what happens to the graphs of the lines as the slopes become large.
- (b) Write an equation of a line that passes through the origin and is horizontal.
17. Graph $y = x + 1, y = x + 10$, and $y = x + 100$ in the window $-10 \leq x \leq 10, -10 \leq y \leq 10$.
- (a) Explain what happens to the graph of a line, $y = b + mx$, as b becomes large.
- (b) Write a linear equation whose graph cannot be seen in the window $-10 \leq x \leq 10, -10 \leq y \leq 10$ because all its y -values are less than the y -values shown.
18. The graphical interpretation of the slope is that it shows steepness. Using a calculator or a computer, graph the

19. Find the coordinates of point P in Figure 1.43.

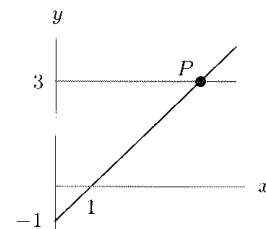


Figure 1.43

20. Estimate the slope of the line in Figure 1.44 and find an approximate equation for the line.

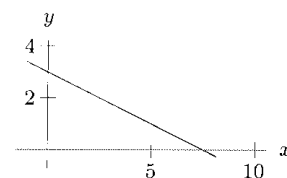


Figure 1.44

21. Line l in Figure 1.45 is parallel to the line $y = 2x + 1$. Find the coordinates of the point P .

