3.2 EXERCISES

PRACTICE

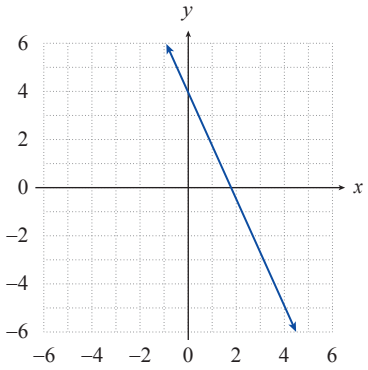
Graph the following linear functions. See Example 1.

1. $f(x) = -5x + 2$
2. $g(x) = \dfrac{3x - 2}{4}$
3. $h(x) = -x + 2$
4. $p(x) = -2$
5. $g(x) = 3 - 2x$
6. $r(x) = 2 - \dfrac{x}{5}$
7. $f(x) = -2(1 - x)$
8. $a(x) = 3\left(1 - \dfrac{1}{3}x\right) + x$
9. $f(x) = 2 - 4x$
10. $g(x) = \dfrac{2x - 8}{4}$
11. $h(x) = 5x - 10$
12. $k(x) = 3x - \dfrac{2 + 6x}{2}$
13. $m(x) = \dfrac{-x + 25}{10}$
14. $q(x) = 1.5x - 1$
15. $w(x) = (x - 2) - (2 + x)$

Match the following functions with their graphs.

16. $f(x) = (8x - 14) - (-17 + 2x)$
17. $f(x) = 3x - \dfrac{7 + 8x}{3}$
18. $f(x) = \dfrac{6}{2} - \dfrac{2}{8}x$
19. $f(x) = 2\left(2 - \dfrac{8}{5}x\right) + x$

a.



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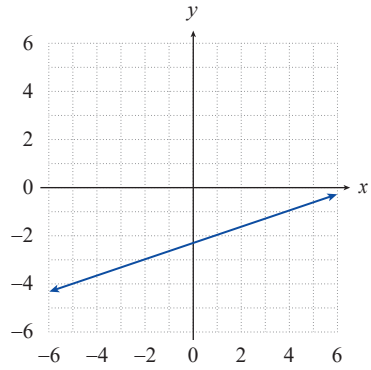
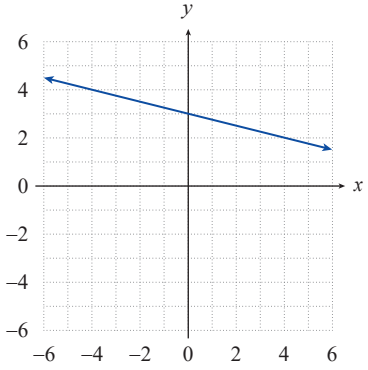
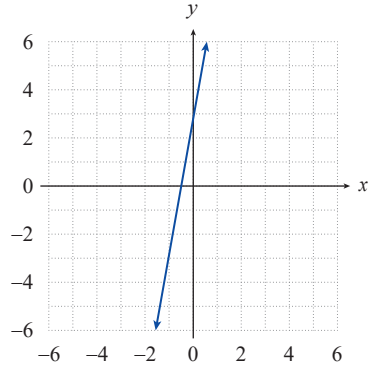


c.

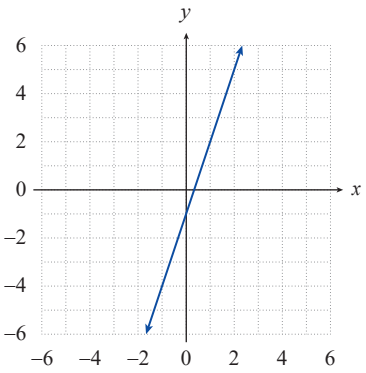


d.



Find a formula for the linear function depicted in each of the following graphs. See Example 2.

20.



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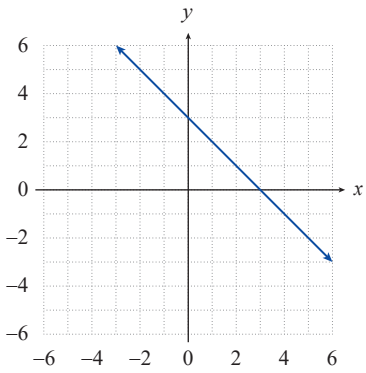

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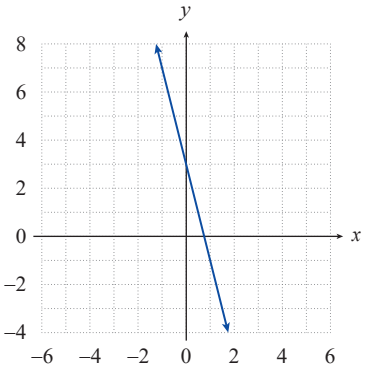
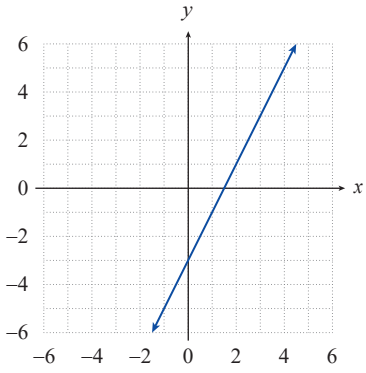


23.



For the given points, **a.** use linear regression to find and graph the line of best fit along with the points, and **b.** find the Pearson correlation coefficient *r*. See Examples 3 and 4.

24. $(0,3),(1,5),(2,7),(3,8)(5,9),(6,9)$

25. $(1,10),(2,8),(3,7),(4,6),(5,5),(6,5),(7,4)$

26. $(1,9.6),(2,8.7),(3,7.7),(4,6.1),(5,5.0)$

27. $(1,5.2),(2,6.4),(3,8.1),(4,9.2),(5,10.6)$

28. $(1,5),(2,-1),(3,5),(4,0),(5,4)$

29. $(-2,2),(-1,2),(0,-1),(1,-1),(2,0)$

APPLICATIONS

30. An automobile company is running a new television commercial in five cities with approximately the same population. The following table shows the number of times the commercial is run on TV in each city and the number of car sales (in hundreds).

a. Find the linear regression line for the data given in the table.
b. Graph the data and the regression line on the same set of axes.
c. Find the Pearson correlation coefficient *r*.

Number of TV Commercials (x)	4	5	12	16	18
Car Sales (in hundreds) (y)	3	5	5	8	7

31. The following table shows the high school grade-point averages (HS-GPA) and the college grade-point averages (C-GPA) after 1 year of college for 10 students.

a. Find the linear regression line for the data given in the table.
b. Graph the data and the regression line on the same set of axes.
c. Find the Pearson correlation coefficient r.

HS-GPA (x)	2.0	2.0	2.2	2.2	2.7	3.2	3.2	3.3	3.5	3.7
C-GPA (y)	1.5	1.8	2.0	1.5	2.0	2.8	3.0	3.5	3.5	3.4

32. Keisha makes refrigerator magnets and has just started selling them along with other handcrafted items at craft shows. After four shows, she has collected the data below regarding price per magnet versus number of magnets sold.

a. Find the linear regression line for the data given in the table.
b. Graph the data and the regression line on the same set of axes.
c. Find the Pearson correlation coefficient r.

Number of Magnets Sold (x)	1	3	5	8
Price per Magnet (y)	$14	$11	$10	$6

WRITING & THINKING

33. The data in a set A has a Pearson correlation coefficient of 0.98 and the data in a set B has a Pearson correlation coefficient of −0.98. Which data set has the strongest correlation? Explain.

34. What does the sign of the Pearson correlation coefficient tell you about the line of best fit?