HOMEWORK

Homework Problems

Circle the homework problems assigned to you by the computer, then complete them below.

Explain

Finding the Equation I

1. Find the equation of the line that passes through the point (4, 1) and has slope 2. Write your answer in point-slope form.
2. Find the equation of the line that passes through the points (2, 3) and (4, 7). Write your answer in point-slope form.
3. Rewrite the equation of the line below in standard form.

   $y - 2 = -3(x - 7)$
4. Find the equation of the line that passes through the point (2, 9) and has slope 4. Write your answer in point-slope form.
5. Find the equation of the line that passes through the points (6, 3) and (5, 0). Write your answer in point-slope form.
6. Rewrite the equation of the line below in standard form.

   $y + 7 = 2(x - 4)$
7. Find the equation of the line that passes through the point (8, 4) and has slope –1. Write your answer in point-slope form.
8. Find the equation of the line that passes through the points (3, 1) and (5, –2). Write your answer in standard form.
9. Alberto is rafting on a river that flows at a constant rate. After 1 hour he had gone 6 miles. Write the equation of the line that shows how fast Alberto is traveling, then use your equation to find out when he will have gone 27 miles. Let $x =$ the length of time Alberto has been rafting; let $y =$ the number of miles he has traveled.
10. Jenne set her cruise control and is driving at a constant rate. After 2 hours she has driven 128 miles. Write the equation of the line that shows how fast Jenne is driving, then use your equation to find out after how many hours she will have driven 288 miles. Let $x =$ the length of time Jenne has been driving; let $y =$ the distance she has gone.
11. Find the equation of the line that passes through the point (0, –7) and has slope $-\frac{2}{5}$. Write your answer in point-slope form and in standard form.
12. Find the equation of the line that passes through the points (3, –6) and (–4, –2). Write your answer in point-slope form and in standard form.

Finding the Equation II

13. Find the slope and the y-intercept of the line $y = 2x + 5$.
14. Find the equation of the line that passes through the point (0, 2) and has slope 3. Write your answer in slope-intercept form.
15. Find the equation of the vertical line that passes through the point (4, 3).
16. Find the slope and the y-intercept of the line $y = \frac{4}{5}x - 3$.
17. Find the equation of the line that passes through the point (0, –6) and has slope 1. Write your answer in slope-intercept form.
18. Find the equation of the horizontal line that passes through the point (1, –3).
19. Find the slope and the y-intercept of the line $7x - 4y = 2$.
20. Find the equation of the line that passes through the point (–4, 6) and has slope 2. Write your answer in slope-intercept form.

21. Dina planted a six-foot tree in her backyard which she expects to grow at the rate of 4 feet per year. Find the equation of the line that shows how tall the tree will be each year, then use your equation to find out how tall the tree will be 4 years after she plants it. Let $x =$ the number of years since she planted the tree; let $y =$ the height of the tree in feet.

22. A city's diving pool is being drained. If the pool is 14 feet deep and the water level goes down 3 feet every 2 hours, write an equation that shows how fast the water is being drained from the pool. Then use your equation to find out how many hours will pass before the pool is empty. Let $x =$ the number of hours the pool has been draining; let $y =$ the depth of the water in the pool.

23. Find the equation of the line that passes through the point $(-8, 11)$ and has slope $-\frac{7}{4}$. Write your answer in slope-intercept form and in standard form.

24. Find the equation of the line that passes through the point $(-2, 4)$ and has slope $-\frac{5}{3}$. Write your answer in slope-intercept form and in standard form.

Explore

25. Graph each of the equations below. Then write several sentences to describe the effect that changing the slope has on the graphs.

$y = x + 1$ $y = 2x + 1$ $y = 3x + 1$

26. Graph the line that passes through the point $(0, -4)$ and has slope 2. Then find the x-intercept of the line. Write several sentences describing the relationship of the y-intercept and the slope to the x-intercept.

27. On a grid, draw three lines through the point $(-2, 3)$:

    a. one line with slope -1

    b. one line with slope -2

    c. one line with slope -3

    Write several sentences comparing the y-intercepts of the lines.

28. Graph each of the equations below. Then write several sentences to describe the effect that changing the y-intercept has on the graphs.

$y = 2x + 1$ $y = 2x + 5$ $y = 2x - 3$

29. Graph the line that passes through the point $(0, 3)$ with slope $\frac{3}{2}$. Then find the x-intercept of the line. Write several sentences describing the relationship of the y-intercept and the slope to the x-intercept.

30. On a grid, draw three lines with slope 1:

    a. one line through the point $(2, 4)$

    b. one line through the point $(2, 2)$

    c. one line through the point $(2, -3)$

    Write several sentences comparing the distance between each pair of points and the distance between the y-intercepts of each pair of lines.

APPLY

Practice Problems

Here are some additional practice problems for you to try.

Finding the Equation I

1. Find the equation of the line that passes through the point (3, 1) and has slope $m = 2$. Write your answer in point-slope form.
2. Find the equation of the line that passes through the point (5, 2) and has slope $m = 3$. Write your answer in point-slope form.
3. Find the equation of the line that passes through the point (2, 7) and has slope $m = -3$. Write your answer in point-slope form.
4. Find the equation of the line that passes through the point (1, 6) and has slope $m = -2$. Write your answer in point-slope form.
5. Find the equation of the line that passes through the point (4, –2) and has slope $m = \frac{2}{3}$. Write your answer in point-slope form.
6. Find the equation of the line that passes through the point (2, –4) and has slope $m = -\frac{3}{5}$. Write your answer in point-slope form.
7. Find the equation of the line that passes through the point (3, –1) and has slope $m = -\frac{1}{2}$. Write your answer in point-slope form.
8. Find the equation of the line that passes through the point (–3, 1) and has slope $m = -\frac{4}{5}$. Write your answer in point-slope form.
9. Find the equation of the line that passes through the point (–5, 3) and has slope $m = \frac{3}{8}$. Write your answer in point-slope form.
10. Find the equation of the line that passes through the point (–4, 2) and has slope $m = \frac{5}{7}$. Write your answer in point-slope form.
11. Rewrite the equation $y - 2 = 3(x - 5)$ in standard form.
12. Rewrite the equation $y + 7 = 4(x - 2)$ in standard form.
13. Rewrite the equation $y + 3 = 5(x - 4)$ in standard form.
14. Rewrite the equation $y - 6 = -3(x + 4)$ in standard form.
15. Rewrite the equation $y + 2 = -5(x - 1)$ in standard form.
16. Rewrite the equation $y - 7 = -2(x + 4)$ in standard form.
17. Rewrite the equation $y - 4 = \frac{3}{4}(x - 8)$ in standard form.
18. Rewrite the equation $y + 5 = -\frac{4}{7}(x + 7)$ in standard form.
19. Rewrite the equation $y + 8 = -\frac{2}{5}(x + 5)$ in standard form.
20. Find the equation of the line that passes through the points (4, 5) and (2, 11). Write your answer in point-slope form and standard form.
21. Find the equation of the line that passes through the points (–6, 2) and (–3, –4). Write your answer in point-slope form and standard form.
22. Find the equation of the line that passes through the points (3, 2) and (1, 12). Write your answer in point-slope form and standard form.
23. Find the equation of the line that passes through the points (2, 7) and (5, 13). Write your answer in point-slope form and standard form.
24. Find the equation of the line that passes through the points (–1, 5) and (–2, 1). Write your answer in point-slope form and standard form.
25. Find the equation of the line that passes through the points (6, 7) and (3, –2). Write your answer in point-slope form and standard form.

26. Find the equation of the line that passes through the points (8, 2) and (1, 7). Write your answer in point-slope form and standard form.

27. Find the equation of the line that passes through the points (–3, 4) and (5, –2). Write your answer in point-slope form and standard form.

28. Find the equation of the line that passes through the points (–4, 8) and (3, 2). Write your answer in point-slope form and standard form.

Finding the Equation II

29. Find the equation of the line in slope-intercept form that passes through the point (3, 1) and has slope $m = 4$.

30. Find the equation of the line in slope-intercept form that passes through the point (–1, 3) and has slope $m = 5$.

31. Find the equation of the line in slope-intercept form that passes through the point (4, –2) and has slope $m = -2$.

32. Find the equation of the line in slope-intercept form that passes through the point (–4, 8) and has slope $m = 3$

33. Find the equation of the line in slope-intercept form that passes through the point (5, –6) and has slope $m = -1$.

34. Find the equation of the line in slope-intercept form that passes through the point (0, –3) and the point (4, 5).

35. Find the equation of the line in slope-intercept form that passes through the point (–2, 0) and the point (–3, –2).

36. Find the equation of the line in slope-intercept form that passes through the point (4, –3) and the point (6, –2).

37. Find the equation of the line in slope-intercept form that passes through the point (3, –5) and the point (6, –4) .

38. Find the equation of the line in slope-intercept form that passes through the point (5, –3) and the point (2, –1).

39. Find the equation of the line in slope-intercept form that passes through the point $\left(\frac{2}{5}, \frac{3}{5}\right)$ and is parallel to the line $y = 3x + 7$.

40. Find the equation of the line in slope-intercept form that passes through the point $\left(\frac{1}{4}, \frac{3}{4}\right)$ and is parallel to the line $y = -2x - 11$.

41. Find the equation of the line in slope-intercept form that passes through the point $\left(\frac{1}{2}, \frac{3}{2}\right)$ and is parallel to the line $y = 4x - 6$.

42. Find the equation of the line in slope-intercept form that passes through the point (6, –3) and is perpendicular to the line $y = -3x + 10$.

43. Find the equation of the line in slope-intercept form that passes through the point (–2, 7) and is perpendicular to the line $y = \frac{1}{5}x - 16$.

44. Find the equation of the line in slope-intercept form that passes through the point (6, –2) and is perpendicular to the line $y = -2x + 4$.

45. Find the slope and y-intercept of the line $-3x + y = 8$.

46. Find the slope and y-intercept of the line $4x - y = -13$.

47. Find the slope and y-intercept of the line $2x - y = 4$.

48. Find the slope and y-intercept of the line $2x + 5y = 12$.

49. Find the slope and y-intercept of the line $4x - 3y = 6$.

50. Find the slope and y-intercept of the line $3x - 2y = -5$.

51. Find the equation of the vertical line that passes through the point (7, 3).

52. Find the equation of the vertical line that passes through the point (–10, –5).

53. Find the equation of the vertical line that passes through the point (8, –2).

54. Find the equation of the horizontal line that passes through the point (7, 0).

55. Find the equation of the horizontal line that passes through the point (–2, 9).

56. Find the equation of the horizontal line that passes through the point (6, –5).

EVALUATE

Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

1. Find the equation of the line that passes through the point (2, –5) and has slope –2.

2. The equation of a line in point-slope form is $y - 1 = 4(x + 2)$. Find the slope of the line and the coordinates of one point that lies on the line.

3. Find the equation of the line that passes through the point (–5, –3) and has slope $\frac{4}{7}$. Write your answer in standard form.

4. Find the equation of the line that passes through the points (–6, –8) and (–1, 7). Write your answer in standard form.

5. Find the equation of the line that passes through the point (0, 2) and has slope –3. Write your answer in standard form.

6. The equation of a line in slope-intercept form is $y = 2x - 7$. Find the slope of the line and the y-intercept of the line.

7. Find the equation of the horizontal line that passes through the point (0, –6).

8. The point $P(4, -3)$ is plotted in Figure 4.2.1. Plot another point Q so that the slope of the line that passes through the points P and Q is undefined.

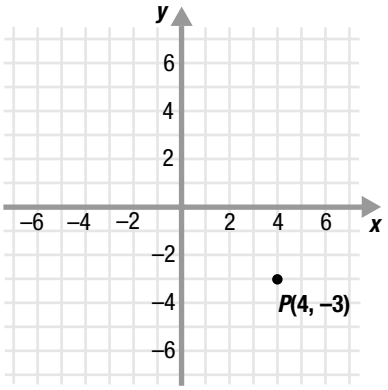

Figure 4.2.1

9. Circle every equation below that represents a line that passes through the point (5, 2).

$y - 5 = \frac{1}{5}(x - 2)$ $\quad$ $y - 2 = 3(x - 5)$

$y + 2 = 4(x + 5)$ $\quad$ $y - 2 = \frac{3}{4}(x - 5)$

$y + 2 = -2(x + 5)$

10. Find the equation of the line that passes through the point (2, –3) and is parallel to the line $y = 3x + 4$. Write your answer in standard form.

11. Use the graphs of the lines A and B in Figure 4.2.2 to decide which of the following statements are true.

    The slope of line A is greater than the slope of line B.

    The slope of line A is less than the slope of line B.

    The y-coordinate of the y-intercept of line A is less than the y-coordinate of the y-intercept of line B.

    The x-coordinate of the x-intercept of line A is less than the x-coordinate of the x-intercept of line B.

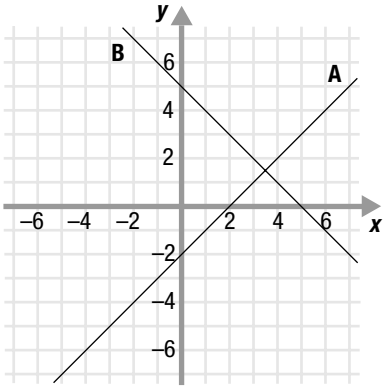

Figure 4.2.2

12. The y-intercepts of two parallel lines are (0, –4) and (0, 3). If the slope of each line is 2, what are the equations of the lines?