

## Parallel and Perpendicular Lines

**Find the slope of a line parallel to each given line.**

1)  $y = 2x + 4$

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

3)  $y = 4x - 5$

4)  $y = -\frac{10}{3}x - 5$

5)  $x - y = 4$

6)  $6x - 5y = 20$

7)  $7x + y = -2$

8)  $3x + 4y = -8$

**Find the slope of a line perpendicular to each given line.**

9)  $x = 3$

10)  $y = -\frac{1}{2}x - 1$

11)  $y = -\frac{1}{3}x$

12)  $y = \frac{4}{5}x$

13)  $x - 3y = -6$

14)  $3x - y = -3$

15)  $x + 2y = 8$

16)  $8x - 3y = -9$

**Write the point-slope form of the equation of the line described.**

17) through:  $(2, 5)$ , parallel to  $x = 0$

18) through:  $(5, 2)$ , parallel to  $y = \frac{7}{5}x + 4$

19) through:  $(3, 4)$ , parallel to  $y = \frac{9}{2}x - 5$

20) through:  $(1, -1)$ , parallel to  $y = -\frac{3}{4}x + 3$

21) through:  $(2, 3)$ , parallel to  $y = \frac{7}{5}x + 4$

22) through:  $(-1, 3)$ , parallel to  $y = -3x - 1$

23) through:  $(4, 2)$ , parallel to  $x = 0$

24) through:  $(1, 4)$ , parallel to  $y = \frac{7}{5}x + 2$

25) through:  $(1, -5)$ , perp. to  $y = x + 1$

26) through:  $(1, -2)$ , perp. to  $y = \frac{1}{2}x + 1$

27) through:  $(5, 2)$ , perp. to  $y = -5x - 3$

28) through:  $(1, 3)$ , perp. to  $y = x + 1$

29) through:  $(4, 2)$ , perp. to  $y = 4x$

30) through:  $(-3, -5)$ , perp. to  $y = -\frac{3}{7}x$

31) through:  $(2, -2)$ , perp. to  $y = \frac{1}{3}x$

32) through:  $(-2, 5)$ , perp. to  $y = 2x$

**Write the slope-intercept form of the equation of the line described.**

33) through:  $(4, -3)$ , parallel to  $y = -2x$

34) through:  $(-5, 2)$ , parallel to  $y = \frac{3}{5}x$

35) through:  $(-3, 1)$ , parallel to  $y = -\frac{4}{3}x - 1$

36) through:  $(-4, 0)$ , parallel to  $y = -\frac{5}{4}x + 4$

37) through:  $(-4, -1)$ , parallel to  $y = -\frac{1}{2}x + 1$

38) through:  $(2, 3)$ , parallel to  $y = \frac{5}{2}x - 1$

39) through:  $(-2, -1)$ , parallel to  $y = -\frac{1}{2}x - 2$

40) through:  $(-5, -4)$ , parallel to  $y = \frac{3}{5}x - 2$

41) through:  $(4, 3)$ , perp. to  $y = -x - 1$

42) through:  $(-3, -5)$ , perp. to  $y = -\frac{1}{2}x - 2$

43) through:  $(5, 2)$ , perp. to  $x = 0$

44) through:  $(5, -1)$ , perp. to  $y = \frac{5}{2}x + 5$

45) through:  $(-2, 5)$ , perp. to  $y = x - 2$

46) through:  $(2, -3)$ , perp. to  $y = \frac{2}{5}x - 2$

47) through:  $(4, -3)$ , perp. to  $y = \frac{1}{2}x - 3$

48) through:  $(-4, 1)$ , perp. to  $y = -\frac{4}{3}x - 3$

## Answers to Parallel and Perpendicular Lines

- 1) 2                      2)  $-\frac{2}{3}$                       3) 4                      4)  $-\frac{10}{3}$   
5) 1                      6)  $\frac{6}{5}$                       7) -7                      8)  $-\frac{3}{4}$   
9) 0                      10) 2                      11) 3                      12)  $-\frac{5}{4}$   
13) -3                      14)  $-\frac{1}{3}$                       15) 2                      16)  $-\frac{3}{8}$   
17)  $0 = x - 2$                       18)  $y - 2 = \frac{7}{5}(x - 5)$                       19)  $y - 4 = \frac{9}{2}(x - 3)$                       20)  $y + 1 = -\frac{3}{4}(x - 1)$   
21)  $y - 3 = \frac{7}{5}(x - 2)$                       22)  $y - 3 = -3(x + 1)$                       23)  $0 = x - 4$                       24)  $y - 4 = \frac{7}{5}(x - 1)$   
25)  $y + 5 = -(x - 1)$                       26)  $y + 2 = -2(x - 1)$                       27)  $y - 2 = \frac{1}{5}(x - 5)$                       28)  $y - 3 = -(x - 1)$   
29)  $y - 2 = -\frac{1}{4}(x - 4)$                       30)  $y + 5 = \frac{7}{3}(x + 3)$                       31)  $y + 2 = -3(x - 2)$                       32)  $y - 5 = -\frac{1}{2}(x + 2)$   
33)  $y = -2x + 5$                       34)  $y = \frac{3}{5}x + 5$                       35)  $y = -\frac{4}{3}x - 3$                       36)  $y = -\frac{5}{4}x - 5$   
37)  $y = -\frac{1}{2}x - 3$                       38)  $y = \frac{5}{2}x - 2$                       39)  $y = -\frac{1}{2}x - 2$                       40)  $y = \frac{3}{5}x - 1$   
41)  $y = x - 1$                       42)  $y = 2x + 1$                       43)  $y = 2$                       44)  $y = -\frac{2}{5}x + 1$   
45)  $y = -x + 3$                       46)  $y = -\frac{5}{2}x + 2$                       47)  $y = -2x + 5$                       48)  $y = \frac{3}{4}x + 4$