

In exercises 1-3, let L be the line determined by points A and B . Find the slope of line L and the line perpendicular to line L .

1. $A(1, -2), B(2, 1)$

2. $A(-2, -1), B(1, -2)$

3. $A(1, 2), B(1, -3)$

In exercises 4-6, write an equation for (a) the vertical line and (b) the horizontal line through the point P .

4. $P(3, 2)$

5. $P(0, -\sqrt{2})$

6. $P\left(-\pi, \frac{\pi}{4}\right)$

In exercises 7-9, write an equation for the line (**point-slope form**) through the given point P with slope m .

7. $P(1, 2), m = 1$

8. $P(-4, 0), m = -2$

9. $P(-\pi, \pi), m = \frac{\sqrt{2}}{2}$

In exercises 10-12, write an equation for the line (**point-slope form**) that goes through the two points.

10. $(0, 0), (2, 3)$

11. $\left(\frac{1}{2}, \frac{7}{2}\right), \left(0, \frac{3}{4}\right)$

12. $(1, -2), (3, -2)$

In exercises 13-15, find the (a) slope, (b) x -intercept and (c) y -intercept of the graph of each line.

13. $3x + 4y = 12$

14. $\frac{x}{3} + \frac{y}{4} = 1$

15. $x = 4$

In exercises 16-19 you are given an equation for line L . Write the equations for the lines that pass through point P that are (a) parallel to L , (b) perpendicular to L .

16. $P(-2, 2), L: 2x + y = 4$

17. $P(-6, 4), L: 3x + 4y = 7$

18. $P\left(-1, \frac{1}{2}\right), L: y = 3$

In exercises 20 and 21, a table of values is given for the line function $f(x) = mx + b$. Determine $f(10)$.

19.

x	$f(x)$
1	2
3	9
5	16

20.

x	$f(x)$
2	-1
4	-4
6	-7

In exercises 22 and 23, find the value of x or y for which the line through A and B has the given slope m .

21. $A(-2, 3), B(4, y), m = -\frac{2}{3}$

22. $A(-8, -2), B(x, 2), m = 2$

23. **Parallel and Perpendicular Lines** Given the equations of two lines, $2x + ky = 3$ and $x + y = 1$:

(a) what would be the value of k in order for the lines to be parallel?

(b) what would be the value of k in order for the lines to be perpendicular?

Answers:

$m = 3$ 1) $m_{\perp} = -\frac{1}{3}$	2) $m = -\frac{1}{3}$ $m_{\perp} = 3$	3) slope = und $m_{\perp} = 0$	4) $x = 3$ $y = 2$	5) $x = 0$ $y = -\sqrt{2}$	6) $x = -\pi$ $y = \frac{\pi}{4}$
7) $y - 2 = 1(x - 1)$	8) $y - 0 = -2(x + 4)$	9) $y - \pi = \frac{\sqrt{2}}{2}(x + \pi)$	10) $y - 3 = \frac{3}{2}(x - 2)$	11) $y - \frac{3}{4} = \frac{11}{2}(x - 0)$	12) $y + 2 = 0(x - 3)$
13) $m = -\frac{3}{4}$ (4, 0) (0, 3)	14) $m = -\frac{4}{3}$ (3, 0) (0, 4)	15) undefined (4, 0) none	16) $y - 2 = -2(x + 2)$ $y - 2 = \frac{1}{2}(x + 2)$	17) $y - 4 = -\frac{3}{4}(x + 6)$ $y - 4 = \frac{4}{3}(x + 6)$	18) $y - \frac{1}{2} = 0(x + 1)$ $x = -1$
19) $\frac{67}{2}$	20) -13	21) -1	22) -6	23) a) $k = 2$ b) $k = -2$	