

Algebra II

Extra Practice

Linear equations

Written Exercises

Find an equation in standard form and with integers as coefficients of the line through P having the given slope.

- A**
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| 1. $P(3, 1), m = 1$ | 2. $P(1, 2), m = -2$ | 3. $P(4, 0), m = -1$ |
| 4. $P(-3, 2), m = 0$ | 5. $P(-3, -5), m = -3$ | 6. $P(6, -2), m = \frac{1}{2}$ |
| 7. $P(3, -4), m = 0$ | 8. $P(-3, 2), m = -\frac{2}{3}$ | 9. $P(-2, 6)$, vertical |
| 10. $P(-6, -5)$, vertical | 11. $P(-1, -5), m = 0.2$ | 12. $P(-3, 0), m = -0.4$ |

Find an equation in standard form and with integers as coefficients of the line having slope m and y -intercept b .

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| 13. $m = -2, b = 1$ | 14. $m = 1, b = -4$ | 15. $m = \frac{1}{2}, b = -3$ |
| 16. $m = -\frac{2}{3}, b = \frac{1}{3}$ | 17. $m = 0.4, b = 1.2$ | 18. $m = -1.5, b = 2.5$ |

Find an equation in standard form of the line containing the given points.

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| 19. $(0, 0), (2, -3)$ | 20. $(0, 0), (-4, 2)$ | 21. $(4, 0), (0, -3)$ |
| 22. $(-4, 0), (0, 6)$ | 23. $(3, -4), (4, -3)$ | 24. $(3, -2), (-2, -2)$ |
| 25. $(-1, -4), (-1, 5)$ | 26. $(3, -1), (3, 5)$ | 27. $(1, -3), (3, 3)$ |
| 28. $(-1, -2), (-3, -4)$ | 29. $(\frac{1}{2}, \frac{2}{3}), (1, \frac{1}{6})$ | 30. $(\frac{5}{8}, -\frac{1}{3}), (1, -\frac{2}{3})$ |

Find equations in standard form of the lines through the point P that are (a) parallel to, and (b) perpendicular to, the line L .

- B**
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| 31. $P(0, 2); L: x + y = 6$ | 32. $P(0, -1); L: y = x + 2$ |
| 33. $P(0, -3); L: 2x - y = 4$ | 34. $P(0, 5); L: 3x + 2y = 6$ |
| 35. $P(2, 5); L: y = -3$ | 36. $P(-1, 3); L: x = 4$ |
| 37. $P(2, -3); L: 3x + 5y = -1$ | 38. $P(-5, 0); L: x - 3y = 3$ |
| 39. $P(4, 0); L: 3x - 2y = 7$ | 40. $P(1, 3); L: x = 5y + 1$ |

In Exercises 41-46 the vertices of a quadrilateral $ABCD$ are given. Determine whether or not $ABCD$ is a parallelogram, and, if it is, whether or not it is a rectangle. (*Hint*: Check to see if the lines containing opposite sides are parallel. If they are, check to see if the lines containing two adjacent sides are perpendicular.)

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| 41. $A(4, -2), B(5, 1), C(0, 3), D(-1, 0)$ | 42. $A(-2, 2), B(0, -2), C(6, 2), D(4, 6)$ |
| 43. $A(4, 1), B(3, 4), C(-4, 2), D(-3, -2)$ | 44. $A(1, 5), B(6, 5), C(6, -3), D(1, -3)$ |
| 45. $A(8, 1), B(1, 6), C(-2, -2), D(5, -3)$ | 46. $A(6, 1), B(5, 5), C(-4, 3), D(-2, -1)$ |

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|---------------------------|---------------------------------------|---------------------------------------|----------------------------|---|
| 1) $y = x - 2$ | 8) $y = -\frac{2}{3}x$ | 15) $y = \frac{1}{2}x - 3$ | 22) $y = \frac{3}{2}x + 1$ | 30) $y = \frac{1}{2}x - \frac{7}{6}$ |
| 2) $y = -2x + 4$ | 9) $x = -2$ | 16) $y = -\frac{2}{3}x + \frac{1}{3}$ | 23) $y = x - 7$ | 31) $\parallel y = -x + 2 \perp y = x + 2$ |
| 3) $y = -x + 4$ | 10) $x = -6$ | 17) $y = \frac{2}{5}x + \frac{6}{5}$ | 24) $y = -2$ | 32) $\parallel y = x - 1 \perp y = -x - 1$ |
| 4) $y = 2$ | 11) $y = \frac{1}{5}x - \frac{24}{5}$ | 18) $y = \frac{3}{2}x + \frac{5}{2}$ | 25) $x = -1$ | 33) $\parallel y = 2x - 3 \perp y = -\frac{1}{2}x - 3$ |
| 5) $y = -3x - 14$ | 12) $y = -\frac{2}{5}x - \frac{6}{5}$ | 19) $y = -\frac{2}{3}x$ | 26) $x = 3$ | 34) $\parallel y = -\frac{3}{2}x + 5 \perp y = \frac{2}{3}x + 5$ |
| 6) $y = \frac{1}{2}x - 5$ | 13) $y = -2x + 1$ | 20) $y = -\frac{1}{2}x$ | 27) $y = 3x - 6$ | 35) $\parallel y = 5 \perp x = 2$ |
| 7) $y = -4$ | 14) $y = x - 4$ | 21) $y = \frac{3}{4}x - 3$ | 28) $y = x - 1$ | 36) $\parallel x = -1 \perp y = 3$ |
| | | | 29) $y = -x + \frac{7}{6}$ | 37) $\parallel y = -\frac{3}{6}x - \frac{9}{6} \perp y = \frac{5}{3}x - \frac{19}{3}$ |

44) Both
45) Neither
46) Neither

41) Parallelogram
42) Parallelogram
43) Neither

39) $\perp y = -3x - 15$
40) $\perp y = -\frac{2}{3}x + \frac{8}{3}$
41) $\perp y = -5x + 8$

38) $\parallel y = \frac{1}{3}x + \frac{5}{3}$
39) $\parallel y = \frac{2}{3}x - 6$
40) $\parallel y = \frac{1}{5}x + \frac{14}{5}$