⟨3⟩ Graphing a Line Given a Point and Slope

Graph the line with the given point and slope. See Example 5.

39. The line through $(1, 1)$ with slope $\frac{2}{3}$

40. The line through $(2, 3)$ with slope $\frac{1}{2}$

41. The line through $(-2, 3)$ with slope -2

42. The line through $(-2, 5)$ with slope -1

43. The line through $(0, 0)$ with slope $-\frac{2}{5}$

44. The line through $(-1, 4)$ with slope $-\frac{2}{3}$

⟨4–5⟩ Parallel and Perpendicular Lines

Solve each problem. See Examples 6 and 7.

45. Draw line l_1 through $(1, -2)$ with slope $\frac{1}{2}$ and line l_2 through $(-1, 1)$ with slope $\frac{1}{2}$.

46. Draw line l_1 through $(0, 3)$ with slope 1 and line l_2 through $(0, 0)$ with slope 1.

47. Draw l_1 through $(1, 2)$ with slope $\frac{1}{2}$, and draw l_2 through $(1, 2)$ with slope -2.

48. Draw l_1 through $(-2, 1)$ with slope $\frac{2}{3}$, and draw l_2 through $(-2, 1)$ with slope $-\frac{3}{2}$.

52. Draw l_1 through $(-4, 0)$ and $(0, 6)$. What is the slope of any line parallel to l_1? Draw l_2 through the origin and parallel to l_1.

49. Draw any line l_1 with slope $\frac{3}{4}$. What is the slope of any line perpendicular to l_1? Draw any line l_2 perpendicular to l_1.

53. Draw l_1 through $(-2, 4)$ and $(3, -1)$. What is the slope of any line perpendicular to l_1? Draw l_2 through $(1, 3)$ so that it is perpendicular to l_1.

50. Draw any line l_1 with slope -1. What is the slope of any line perpendicular to l_1? Draw any line l_2 perpendicular to l_1.

54. Draw l_1 through $(0, -3)$ and $(3, 0)$. What is the slope of any line perpendicular to l_1? Draw l_2 through the origin so that it is perpendicular to l_1.

51. Draw l_1 through $(-2, -3)$ and $(4, 0)$. What is the slope of any line parallel to l_1? Draw l_2 through $(1, 2)$ so that it is parallel to l_1.

In each case, determine whether the lines l_1 and l_2 are parallel, perpendicular, or neither. See Example 8.

55. Line l_1 goes through $(3, 5)$ and $(4, 7)$. Line l_2 goes through $(11, 7)$ and $(12, 9)$.

56. Line l_1 goes through $(-2, -2)$ and $(2, 0)$. Line l_2 goes through $(-2, 5)$ and $(-1, 3)$.

57. Line l_1 goes through $(-1, 4)$ and $(2, 6)$. Line l_2 goes through $(2, -2)$ and $(4, 1)$.

58. Line l_1 goes through $(-2, 5)$ and $(4, 7)$. Line l_2 goes through $(2, 4)$ and $(3, 1)$.

59. Line l_1 goes through $(-1, 4)$ and $(4, 6)$. Line l_2 goes through $(-7, 0)$ and $(3, 4)$.