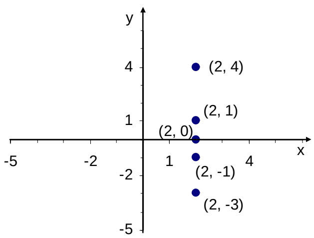
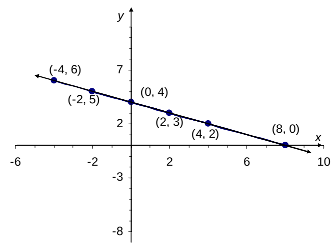
9. The set of points of the form, (2, y), where y is a real number, is a vertical line passing through 2 on the x-axis.

The equation of the line is $x = 2$.



14. $x + 2y = 8$

x	0	**8**	2	–2	4	–4
y	**4**	0	**3**	**5**	**2**	**6**



17. (a) The vertical line containing the point (–4, 1) is $x = -4$.

(b) The horizontal line containing the point (–4, 1) is $y = 1$.

(c)
$$y - 1 = 5(x + 4)$$
$$y - 1 = 5x + 20$$
$$-21 = 5x - y$$

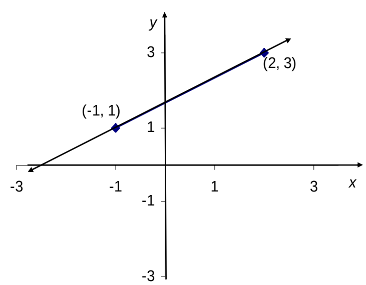
The line with a slope of 5 containing the point (–4, 1) is $5x - y = -21$.

23. $m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{3 - 1}{-1 - 1} = -1$

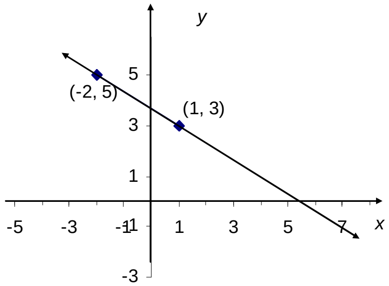
We interpret the slope to mean that for every 1 unit change in x, y changes by (–1) unit. That is, for every 1 unit increase in x, y decreases by 1 unit.

28. $m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{3 - 1}{2 - (-1)} = \dfrac{2}{3}$

A slope of $\dfrac{2}{3}$ means that for every 3 unit increase in x, y will increase 2 units.



36.



44. Use the points (–1, 1) and (2, 2) to compute the slope of the line:

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-1}{2-(-1)} = \frac{1}{3}$$

Next use the point (–1, 1) and the slope $m = \frac{1}{3}$ to write the point-slope form of the equation of the line:

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 1 &= \frac{1}{3}(x-(-1)) \\ y - 1 &= \frac{1}{3}(x+1) \end{aligned}$$

Now write the general form of the equation.

$$\begin{aligned} 3y - 3 &= x + 1 \\ x - 3y &= -4 \end{aligned}$$

48. Since the slope and a point are given, use the point-slope form of the line:

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 1 &= \frac{1}{2}(x-3) \\ 2y - 2 &= x - 3 \\ x - 2y &= 1 \end{aligned}$$

60. Since the slope is undefined, the line is vertical. The equation of the vertical line containing the point (2, 1) is: $x = 2$

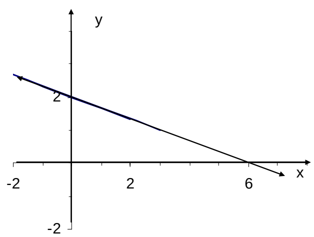
62. Since the slope = 0, the line is horizontal. The equation of the horizontal line containing the point (2, 1) is: $y = 1$

66. To obtain the slope and y-intercept, we transform the equation into its slope-intercept form by solving for y.

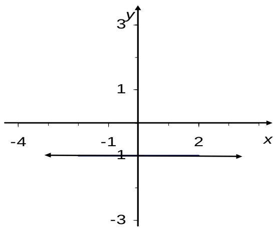
$$\frac{1}{3}x + y = 2$$

$$y = -\frac{1}{3}x + 2$$

slope: $m = -\frac{1}{3}$; y-intercept: (0, 2)



72. slope: $m = 0$; y-intercept: (0, −1)



74. The slope is undefined; there is no y-intercept. So the graph is a vertical line.