Graphing a Line

A linear equation such as $y = 2x - 1$ makes a straight line when it is graphed. To graph it, choose a few values of x, work out each value of y, and plot the points.

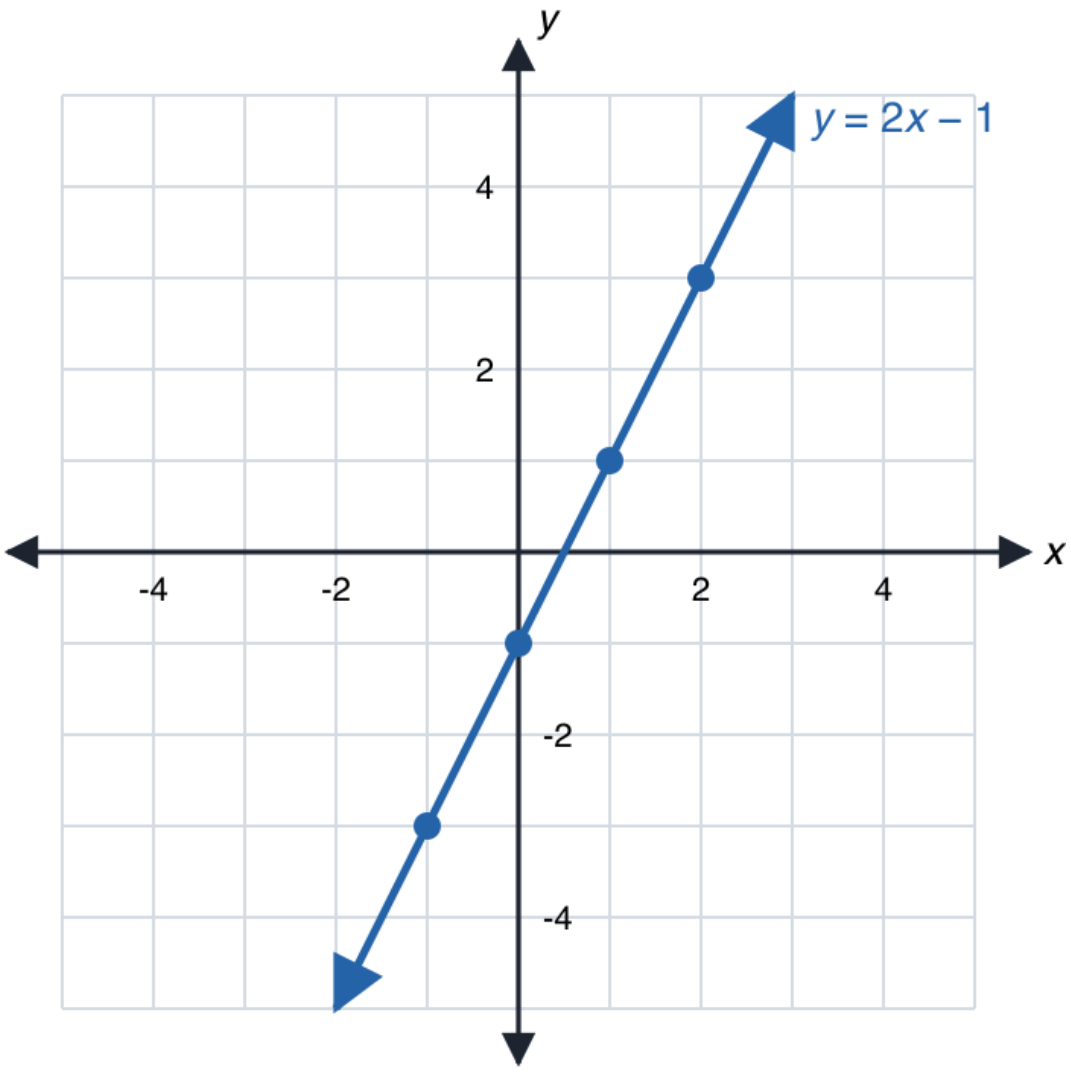
Example

Values for y = 2x − 1

x	y
−1	−3
0	−1
1	1
2	3

Figure title: Graph of y = 2x − 1

Figure description: A coordinate grid with x and y axes from −5 to 5. Four points are plotted: (−1, −3), (0, −1), (1, 1) and (2, 3). A straight line passes through all four points, rising from lower left to upper right, with arrows at both ends. It crosses the y-axis at −1.



The line rises 2 units for every 1 unit it moves to the right, so its slope is $m = 2$. It crosses the y-axis at $(0, -1)$, so the y-intercept is $b = -1$.

Practice

1. Find the slope of the line through $(2,5)$ and $(4,9)$. Use $m = \frac{y_2 - y_1}{x_2 - x_1}$.

2. Solve $3x + 4 = 19$.

3. Write the equation of a line with slope $-\frac{1}{2}$ and y-intercept 3.

4. Does the point $(3,5)$ lie on the line $y = 2x - 1$? Explain.