

Solutions

3.1 Slope as a Rate

3.1.1. Find the slope through $(-2, 5)$ and $(2, -3)$.

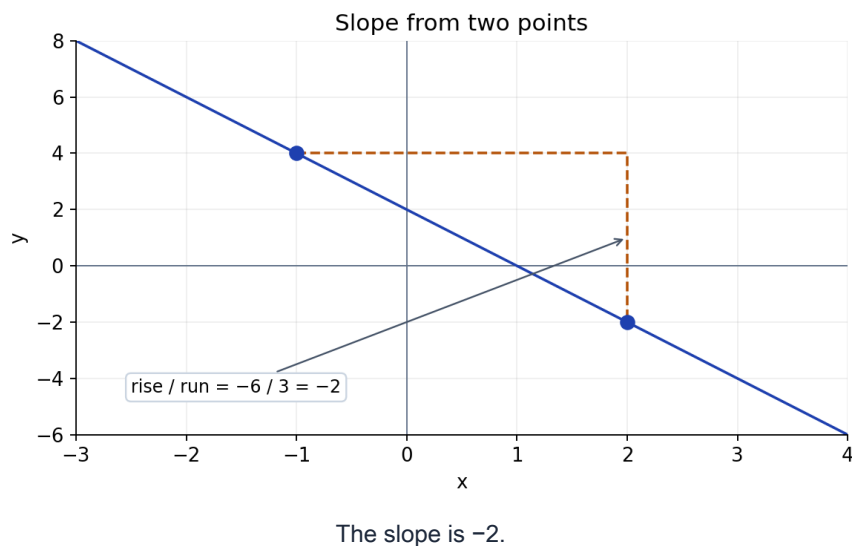
Solution. $m = (-3 - 5)/(2 - (-2)) = -8/4 = -2$.

3.1.2. Find the slope of the line through $(3, 1)$ and $(3, 7)$.

Solution. The denominator is $3 - 3 = 0$, so the line is vertical and its slope is undefined.

3.1.3. Use the graphed points to find the slope and explain its sign.

Solution. The points are $(-1, 4)$ and $(2, -2)$. The slope is $(-2 - 4)/(2 - (-1)) = -2$; the line falls as x increases.



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3.2 Forms of a Linear Equation

3.2.1. Write a slope-intercept equation for slope -2 and y-intercept 5 .

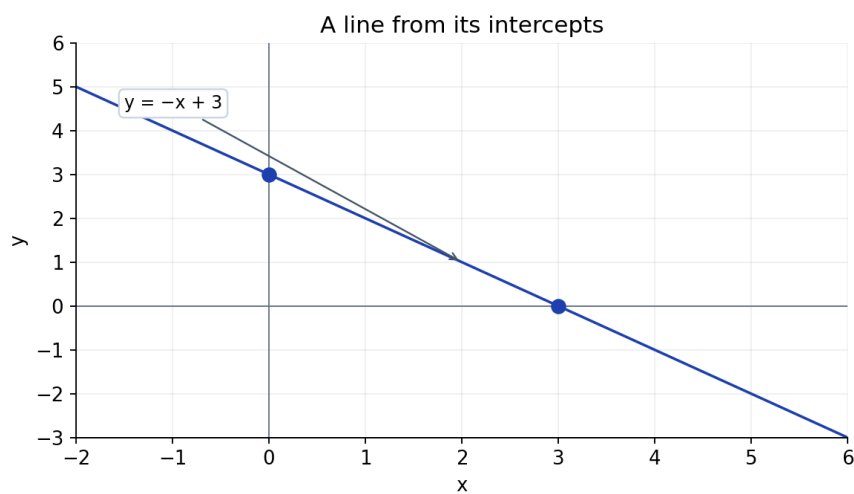
Solution. Substitute the slope and intercept into $y = mx + b$: $y = -2x + 5$.

3.2.2. Write an equation through $(1, 4)$ with slope 2 .

Solution. $y - 4 = 2(x - 1)$, so $y = 2x + 2$.

3.2.3. Write an equation for the graphed line using its intercepts.

Solution. The intercepts are $(0, 3)$ and $(3, 0)$. Its slope is -1 , so $y = -x + 3$.



The equation is $y = -x + 3$.

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3.3 Parallel and Perpendicular Lines

3.3.1. Are $y = 3x + 2$ and $y = 3x - 5$ parallel, perpendicular, or neither?

Solution. They have equal slopes and different intercepts, so they are parallel.

3.3.2. Find a line perpendicular to $y = 4x + 7$ through $(0, 2)$.

Solution. The negative reciprocal slope is $-1/4$. The line is $y = -x/4 + 2$.

3.3.3. What line through $(2, 5)$ is perpendicular to $x = 2$?

Solution. $x = 2$ is vertical. The perpendicular line is horizontal through the point: $y = 5$.