

Objective 1 - Construct a linear function from points

Use points to construct a linear function.

Link to section in OpenStax textbook and link to section in Prelude to Active Calculus textbook.

First, watch the video below to learn about what is necessary to construct a linear function. You can use the notes here to follow along with the video and record your thoughts.

YouTube link: <https://www.youtube.com/watch?v=1lpWLGn81y0>

Question 1 Find the equation of the line containing the two points below. Write the equation in slope-intercept form.
(2, 6) and (3, -6)

$$y = \boxed{-12.0}x + \boxed{30.0}$$

Hint: To construct a linear function, we need its slope and a single point on the line. Can we figure out the slope from two points?

Question 2 Find the equation of the line containing the two points below. Write the equation in slope-intercept form.
(-7, -6) and (-4, 3)

$$y = \boxed{3.0}x + \boxed{15.0}$$

Question 3 Find the equation of the line containing the two points below. Write the equation in slope-intercept form.
(4, 3) and (-3, 6)

$$y = \boxed{-0.42857142857142855}x + \boxed{4.714285714285714}$$

For these problems, you'll be given a description of the line and a point. Think about what information you should get from the line, then use the point to construct a new linear function.

Learning outcomes: Recognize and construct linear functions as well as solve linear equations.

Author(s): Darryl Chamberlain Jr.

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Question 4 Find the equation of the line described below. Write the equation of the line in slope-intercept form.

Parallel to $3x - 4y = 4$ and passing through the point $(-8, -2)$.

$$y = \boxed{0.75}x + \boxed{4.0}$$

Hint: If a line is parallel to another, what does that mean about its slope?

Question 5 Find the equation of the line described below. Write the equation of the line in slope-intercept form.

Parallel to $8x - 3y = 6$ and passing through the point $(-3, -7)$.

$$y = \boxed{2.6666666666666665}x + \boxed{1.0}$$

Question 6 Find the equation of the line described below. Write the equation of the line in slope-intercept form.

Perpendicular to $7x - 7y = 11$ and passing through the point $(10, 10)$.

$$y = \boxed{-1.0}x + \boxed{20.0}$$

Hint: If a line is perpendicular to another, what does that mean about its slope?

Question 7 Find the equation of the line described below. Write the equation of the line in slope-intercept form.

Perpendicular to $5x + 9y = 7$ and passing through the point $(-4, 10)$.

$$y = \boxed{1.8}x + \boxed{17.2}$$
