Finding Linear Functions

Bell Work:

1. **What is the point-slope formula?**
2. **What is the slope formula?**
3. **What is the point-slope form of a line that goes through (6, -5) and has a slope of $-\frac{4}{3}$?**
4. **What is the slope-intercept form of a line that goes through (6, -5) and has a slope of $-\frac{4}{3}$?**

Finding Linear Functions

Today, you are going to write linear functions.

$$y + 5 = -\frac{5}{3}(x - 8)$$

$$y - 5 = \frac{4}{7}(x + 3)$$

$$y + 6 = \frac{1}{4}(x + 10)$$

$$y = -\frac{2}{3}x - \frac{8}{3}$$

$$y - 7 = 3\,(x + 2)$$

Finding Linear Functions

1. **What is the point-slope form of the linear function that goes through (9, -1) and (3, 3)?**

Find the slope using the slope formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{3 - (-1)}{3 - 9}$$

$$m = \frac{4}{-6} = -\frac{2}{3}$$

Use the point-slope formula and substitute the numbers into it.

$$y - y_1 = m(x - x_1)$$

$$y - 3 = -\frac{2}{3}(x - 3)$$

or

$$y + 1 = -\frac{2}{3}(x - 9)$$

2 answers; one for each point

Finding Linear Functions

2. What is the point-slope form of the linear function that goes through (-4, 7) and (4, 13)?

Find the slope using the slope formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{13 - 7}{4 - (-4)}$$

$$m = \frac{6}{8} = \frac{3}{4}$$

Use the point-slope formula and substitute the numbers into it.

$$y - y_1 = m(x - x_1)$$

$$y - 13 = \frac{3}{4}(x - 4)$$

or

$$y - 7 = \frac{3}{4}(x + 4)$$

2 answers; one for each point

Finding Linear Functions

3. What is the point-slope form of the linear function that has the following table?

x	-2	-1	0	1	2	3
y	5	6	7	8	9	10

Find the slope using the slope formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Pick any 2 points from the table.

$$m = \frac{8 - 7}{1 - 0} = \frac{1}{1} = 1$$

Use the point-slope formula and substitute the numbers into it.

$$y - y_1 = m(x - x_1)$$

$$y - 7 = 1(x - 0)$$

or

$$y - 8 = 1(x - 1)$$

or

$$y - 9 = 1(x - 2)$$

or... *6 answers; one for each point*

Finding Linear Functions

4. What is the point-slope form of the linear function that has the following table?

x	-6	-3	0	3	6	9
y	19	14	9	4	-1	-6

Find the slope using the slope formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Pick any 2 points from the table.

$$m = \frac{4 - 9}{3 - 0} = \frac{-5}{3} = -\frac{5}{3}$$

Use the point-slope formula and substitute the numbers into it.

$$y - y_1 = m(x - x_1)$$

$$y - 4 = -\frac{5}{3}(x - 3)$$

or

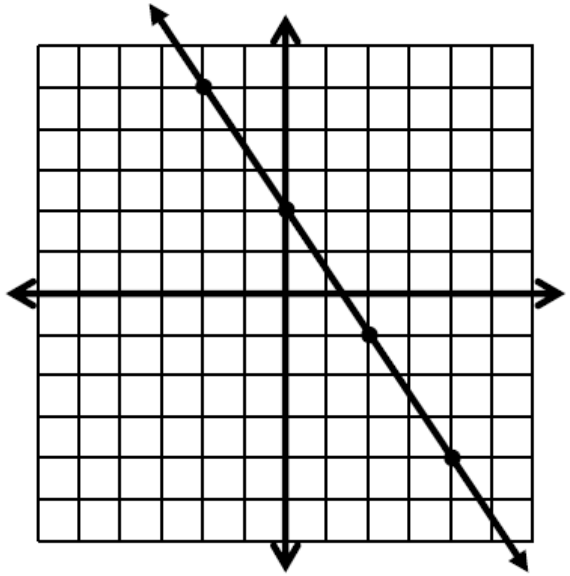
$$y - 9 = -\frac{5}{3}(x - 0)$$

or...

6 answers; one for each point

Finding Linear Functions

5. What is the point-slope form of the linear function that has the following graph?



Find the slope.

$$m = \frac{rise}{run} = -\frac{3}{2}$$

Use the point-slope formula and substitute the numbers into it.

$$y - y_1 = m(x - x_1)$$

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

or

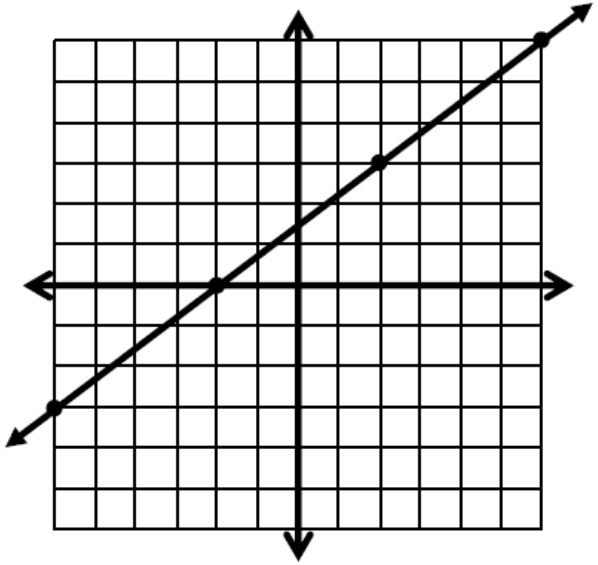
$$y - 2 = -\frac{3}{2}(x - 0)$$

or...

4 answers; one for each point

Finding Linear Functions

6. What is the point-slope form of the linear function that has the following graph?



Find the slope.

$$m = \frac{rise}{run} = \frac{3}{4}$$

Use the point-slope formula and substitute the numbers into it.

$$y - y_1 = m(x - x_1)$$

$$y - 3 = \frac{3}{4}(x - 2)$$

or

$$y - 0 = \frac{3}{4}(x + 2)$$

or...

4 answers; one for each point

Finding Linear Functions

1. **Find the slope using the slope formula.**
2. **Use the point-slope formula.**

Finding Linear Functions

Assignment:

Finding Point-Slope Functions from 2 Points, Tables, or Graphs Worksheet