Example 1:
Find the equation of a line that passes through (-3,4) and has the same slope as y = 3x + 2.

$m = 3$ $\quad (-3,4)$

Write what you know:

$m = 3 \qquad (-3,4)$

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

$y - 4 = 3(x - (-3))$

$y - 4 = 3(x + 3)$ **Point Slope Form**

$y - 4 = 3x + 9$

$y - 4 + 4 = 3x + 9 + 4$

$y = 3x + 13$ **Slope Intercept Form**

Example 2:
Find the equation of a line that passes through the point (-4,3) and is perpendicular to y= 2x-7

$y = mx + b$ $\quad y - y_1 = m(x - x_1)$

$m = \frac{2}{1}$

Write what you know: point $(-4, 3)$

What do we need: $m_\perp = -\frac{1}{2}$

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

have need have

$y - 3 = -\frac{1}{2}(x - (-4))$

$y - 3 = -\frac{1}{2}(x + 4)$ point slope form

$-\frac{1}{2} \times \frac{4}{1} = \frac{-4}{2} = -2$

rearrange to $y = mx + b$

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

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

$\frac{3}{1}$ $m_{\parallel} = 3$ $m_{\perp} = -\frac{1}{3}$

$\frac{1}{2}$ $m_{\parallel} = \frac{1}{2}$ $m_{\perp} = \frac{-2}{1}$ -2

$\frac{6}{7}$ $m_{\parallel} = \frac{6}{7}$ $m_{\perp} = \frac{-7}{6}$

$\frac{9}{-3}$ $\div 3$ $m_{\parallel} = -3$ $m_{\perp} = \frac{3}{9}$

Example 2:
Find the equation of a line that passes through the points (0,5) and (-2,1)

Write what you know: $m = 2$

Point A	Point B
(0,5)	(-2,1)
x_1, y_1	x_2, y_2

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1-5}{-2-0} = \frac{-4}{-2} = 2$

What do we need:

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

have need have

$y - 5 = 2(x - 0)$ OR $y - 1 = 2(x - (-2))$

$y - 5 = 2x$ $y - 1 = 2(x + 2)$

$y = 2x + 5$ $y - 1 = 2x + 4$

$y = 2x + 5$

$y = 2x + 5$

We need slope:

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

$$m = \frac{(1 - 5)}{((-2) - 0)}$$

$$m = \frac{(-4)}{(-2)}$$

$$m = 2$$

Fill in what you know:

(-2,1) m= 2

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

$$y - 1 = 2\,(x - (-2))$$

$$y - 1 = 2x + 4$$

$$y - 1 + 1 = 2x + 4 + 1$$

$$y = 2x + 5$$

PERIOD 1 - Typo in question

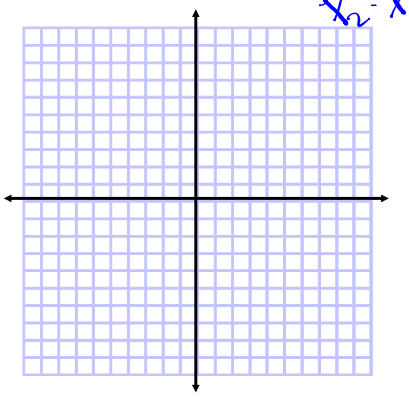
Example 3:
Find the equation of a line that passes through the points (8,-3) and (6,1), and has a y intercept of (0,-7)

x_1, y_1 x_2, y_2

$y = mx + b$ $\quad y - y_1 = m(x - x_1)$

$y = -2x - 7$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - (-3)}{6 - 8} = \frac{4}{-2} = -2$



$y - (-3) = -2(x - 8)$

$y + 3 = -2(x - 8)$

this should give you the same as we found using $y = mx + b$ but there is a typo in the question

Example 3:
Find the equation of a line that passes through the points (8,-3) and (6,1), and has a y intercept of (0, 13)

x_1, y_1 x_2, y_2

$y = mx + b$

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

$m = \frac{1-(-3)}{6-8} = \frac{4}{-2} = -2$

$y = -2x + 13$

$y - (-3) = -2(x - 8)$

$y + 3 = -2(x - 8)$

$y - 1 = -2(x - 6)$

$y - 13 = -2(x - 0)$

rearrange $y + 3 = -2x + 16 - 3$

$y = -2x + 13$

Homework:

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

Worksheet on Point-Slope form

Worksheet
Point Slope Form

Please put final answer in Slope-Intercept Form

1) Find the equation of a line that passes through the points (-1,8) and has a slope of 2.

2) Find the equation of a line that passes through the points (6,-3) and has a slope of m=4.

3) Find the equation of the straight line that has slope $m = \frac{3}{4}$ and passes through the point (–1, –6).

4) Find the equation of a line that passes through (-1,1) and has the same slope as y = -3x + 4.

5) Find the equation of a line that passes through (-7,3) and has the same slope as y = 2x + 1.

6) Find the equation of a line that passes through the points (3,-2) and (-4,1)

7) Find the equation of a line that passes through the points (3,-2) and (-4,1)

8) Find the equation of a line that has the same x-intercept as this equation 2x +6 = 3y, and also passes through the point (4,5).

Attachments

Point slope form.docx