

3.0 - Linear functions including Parallel and Perpendicular Lines.notebook January 24, 2020

Homework questions?

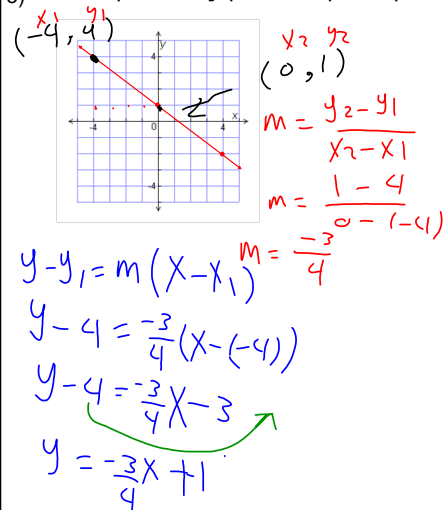
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B. Writing equations for linear functions

- Step 1: Find slope
Step 2: Use point-slope equation
Step 3: Solve for y to make equation in slope-intercept form

Aug 27-8:39 AM

3) Write the equation of the graphed line in slope-intercept form.

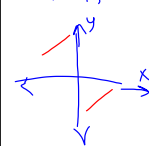


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Vocabulary - what do you remember??

Parallel Lines:

m_1, m_2
 $m_1 = m_2$
 equals



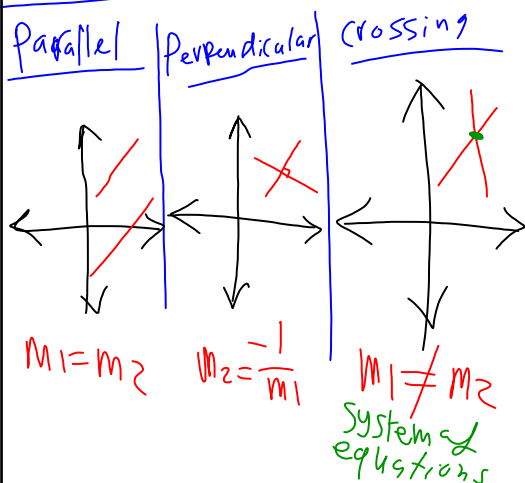
Perpendicular Lines:

m_1, m_2
 $m_2 = -\frac{1}{m_1}$
 if $m_1 = 2$
 $m_2 = -\frac{1}{2}$
 if $m_1 = \frac{1}{3}$
 $m_2 = -\frac{1}{\frac{1}{3}} = -3$

If a Number
 Put -1 ÷ this
 Number
 If it is a fraction
 Change sign &
 flip the fraction

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3 Cases



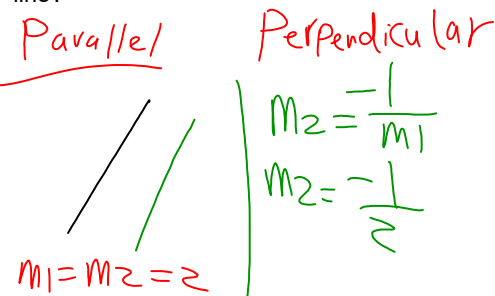
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Slopes of Parallel/Perpendicular Lines

Parallel:

Perpendicular:

Example) If $y = 2x + 5$, then what would be the slope of a parallel line and perpendicular line?



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4) Write the equation of the line in slope-intercept form.
parallel to $y = 1.8x + 3$ and through $(5, 2)$

$y = mx + b$

$m_1 = 1.8 \quad m_2 = m_1 = 1.8$

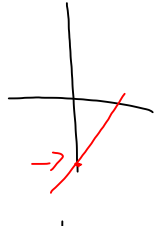
$y - y_1 = m(x - x_1)$

$y - 2 = 1.8(x - 5)$

$y - 2 = 1.8x - 9$

$y = 1.8x - 9 + 2$

$y = 1.8x - 7$



Aug 27-8:53 AM

5) Write the equation of the line in slope-intercept form.
perpendicular to $y = \frac{3}{2}x - 1$ and through $(9, -2)$

$y = mx + b$

$m_1 = -\frac{3}{2} \rightarrow m_2 = \frac{2}{3}$

$y - y_1 = m_2(x - x_1)$

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

$y + 2 = \frac{2}{3}x - 6$

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

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6) Write the equation of the line in slope-intercept form.
parallel to $5x - y = 3$ and through $(1, 4)$

$5x = 3 + y$

$5x - 3 = y \rightarrow m_1 = 5$

$m_2 = m_1 = 5$

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

$y - 4 = 5(x - 1)$

$y - 4 = 5x - 5$

$y = 5x - 1$

Aug 27-8:53 AM

7) Write the equation of the line in slope-intercept form.
perpendicular to $y - 3x + 2 = 0$ and through $(-1, 4)$

**** Get equation in $y = mx + b$ form first so you can determine current slope!**

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Determine if each pair of lines are parallel, perpendicular, or neither.

1. $y = \frac{1}{4}x + 9$ 2. $y = 5 - \frac{1}{8}x$
 $y = 4x - 9$ $y = 8x + 2$

Aug 27-8:57 AM

Determine if each pair of lines are parallel, perpendicular, or neither.

3. $-3x + 4y = 15$ $-3x - 15 = -4y$
 $9x - 12y = 24$ $-\frac{3}{4} = \frac{-15}{-4} = \frac{15}{4}$

$\frac{3}{4}x - 24 = 12y$ $\frac{3}{4}x + \frac{15}{4} = y$
 $\frac{3}{4}x - 2 = y$ $m_1 = \frac{3}{4}$

$m_2 = \frac{3}{4}$

Because $m_1 = m_2 = \frac{3}{4} \Rightarrow$
 Two lines are parallel to each other

Aug 27-8:57 AM