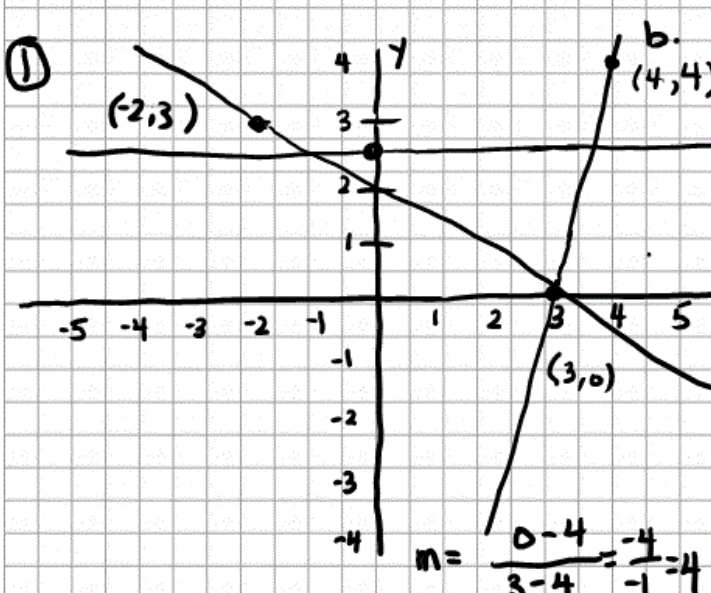


Name: _____ Page Number: 1
 Class: Math 1301 Date: 3-5-13
 Topic/Section: 2.1
More About Linear Functions

Examples and Vocabulary	Notes/Comments/Questions
$m = \frac{\text{change in } y}{\text{change in } x}$ $= \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$ ①  Write the formulas for each of the lines shown here.	a. $y = f(x) = mx + b$ $y = 0x + 2.5 = 2.5$ a. $m = 0$ $b = 2.5$ c. $y = f(x) = mx + b$ $y = -\frac{3}{5}x + 2$ c. $b = 2$ $m = \frac{0 - 3}{3 - (-2)} = \frac{-3}{5}$ b. $y = f(x) = mx + b$ $y = 4x + b$ $y = 4x - 12$ $0 = 4 \cdot 3 + b$ $0 = 12 + b$ $-12 = b$

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Examples and Vocabulary	Notes/Comments/Questions
② Write a formula for the line that passes through the points $(-5, -8)$ and $(6, 3)$. $y = f(x) = mx + b$ $y = 1 \cdot x + b = x - 3$ $3 = 1 \cdot 6 + b$ $3 = 6 + b$ $-3 = b$	$y = m(x - x_1) + y_1$ $y = 1(x - 6) + 3$ $y = x - 6 + 3 = x - 3$ $m = \frac{3 - (-8)}{6 - (-5)} = \frac{3 + 8}{6 + 5} = \frac{11}{11}$ $= 1$

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 Class: _____ Date: 3-5-13
 Topic/Section: _____

Examples and Vocabulary	Notes/Comments/Questions
③ Suppose a line passes through the points (x_1, y_1) and (x_2, y_2). Write a formula for the line. $y = f(x) = mx + b$ $m = \frac{y_2 - y_1}{x_2 - x_1}$ $y_1 = mx_1 + b$ $y_1 - mx_1 = b$	$y = mx + y_1 - mx_1$ $y = mx - mx_1 + y_1$ $y = m(x - x_1) + y_1$

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Examples and Vocabulary	Notes/Comments/Questions
④ Write a formula for the line that passes through the points $(-5, -8)$ and $(6, 3)$. See above.	

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 Topic/Section: _____

Examples and Vocabulary	Notes/Comments/Questions
<u>Slope - Intercept Formula</u> $y = f(x) = mx + b$ $m = \text{slope}$ $b = y\text{-intercept}$	
<u>Point - Slope Formula</u> $y = f(x) = m(x - x_1) + y_1$ $m = \text{slope}$ $(x_1, y_1) = \text{point on the line}$	

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Examples and Vocabulary	Notes/Comments/Questions
⑤ The number of consumer products that use nanotechnology was 54 in 2005, but had grown to 1014 in 2009. a. Use a linear function to predict the number of consumer products using nanotechnology in 2020. y = number of consumer products ... x = elapsed years since 2000 $y = f(x) = mx + b = m(x - x_1) + y_1$ $y = 240(x - 5) + 54$ $y = 240(20 - 5) + 54 = 240(15) + 54 = 3654$	$(5, 54)$ $(9, 1014)$ $m = \frac{1014 - 54}{9 - 5} = \frac{960}{4}$ $= 240$

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Examples and Vocabulary	Notes/Comments/Questions
b. Use a linear function to determine when this number will reach 2000. 2013 $2000 = 240(x - 5) + 54$ $2000 = 240x - 1200 + 54$ $2000 + 1200 - 54 = 240x$ $3146 = 240x$ $\frac{3146}{240} = x$ $13 \approx x$	