mi

Ch 7: Linear Equations and Graphs

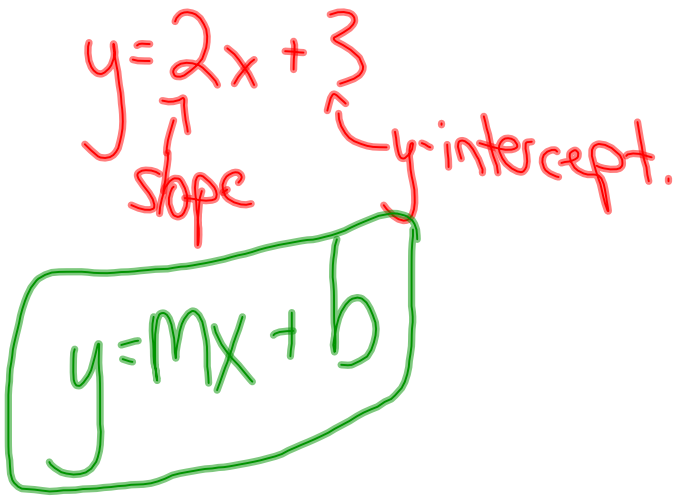
Slope-intercept form, general form, slope-point form, parallel and perpendicular lines

Jan 21-4:44 PM

7.1 - Slope-intercept Form

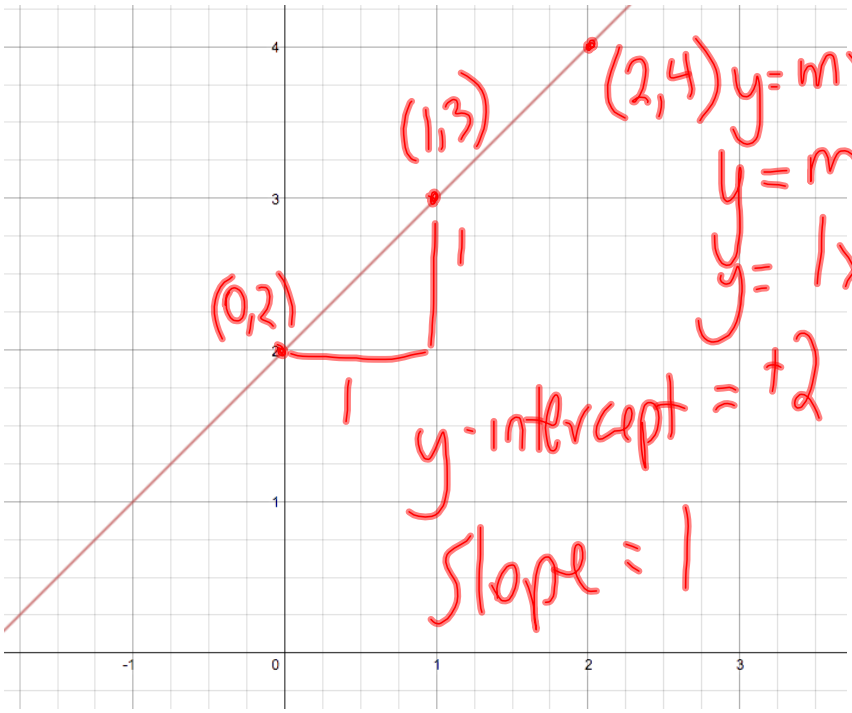
Any guess what this form looks like?

(Hint: We figured this out in class on Tuesday)



Jan 21-4:45 PM

Write the equation of the line in slope-intercept form. Then graph the equation on your graphing calculator.



Jan 21-4:46 PM

Convert an equation to slope-intercept form:

You rent a hall for a talent show fundraiser. The relationship between the number of tickets sold, x, and the profit, y, in dollars, may be represented by the equation *12x - y - 840 = 0.*

Convert the equation to slope intercept form. What is the slope, y-intercept and number of tickets you must sell to break even?

$12x - y - 840 = 0$

$12x - y = 840$

$-y = 840 - 12x$

$y = -840 + 12x$

$y = 12x - 840$

$y = 12x - 840$

$y = mx + b$

$12x - 840 = y$

slope = 12

y-intercept: -840

Jan 21-4:54 PM

Homework: Pg 349 #5abc, 6abc, 8ace, 9, 10, 12, 13, 18

Jan 21-5:00 PM

7.2 General Form

Where everything = 0

Ax+By+C=0, where A and B are not both zero. By convention A is a whole number.

Jan 21-5:05 PM

Rewrite the following equation in general form.

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

$-y \quad -y$

$4(0 = \frac{3}{4}x - 1y - 2)$

$0 = 3x - 4y - 8$

Jan 25-10:54 AM

For the linear equation *4x+5y-20=0,*
a) What is the x-intercept of the graph?
b) What is the y-intercept?
c) Use the intercepts to graph the line.

a) $4x - 5y - 20 = 0$

$4x + 5(0) - 20 = 0$

$4x - 20 = 0$

$\frac{4}{4}x = \frac{20}{4}$

$x = 5$

b) $4x + 5y - 20 = 0$

$4(0) + 5y - 20 = 0$

$5y - 20 = 0$

$\frac{5y}{5} = \frac{20}{5}$

$y = 4$

Jan 25-10:55 AM

Brooke wants to save $336. She has two part-time jobs. On weekends, she works as a snowboard instructor and earns $12 an hour. On weekends, she earns $16 an hour working as a high school tutor.

a) Write an equation to represent the number of hours Brooke needs to work as a snow board instructor, S, and as a tutor, T.

b) What is the S-intercept of a graph of the equation?

c) What would the T-intercept be? What does it represent?

d) Suppose Brooke works 8 h as a snow board instructor. How many hours will she need to work as a tutor to get $336?

a) $12S + 16T = 336$

b) $12S + 16(0) = 336$

$12S = 336$

$S = 28$

c) $12(0) + 16T = 336$

$\frac{16T}{16} = \frac{336}{16}$

$T = 21$

d) $12S + 16T = 336$

$12(8) + 16T = 336$

$96 + 16T = 336$

$16T = 240$

$\frac{16T}{16} = \frac{240}{16}$

$T = 15$

Jan 25-10:52 AM

Hmwk: pg 365 #1, 2ace, 3aceg, 5, 7, 10, 13, 14

Jan 25-10:59 AM

7.3 Slope - point form

Recall: $slope = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{y - y_1}{x - x_1}$

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

$$(x_2 - x_1)m = y_2 - y_1$$

where y and x are variables

$$y_2 - y_1 = m(x_2 - x_1)$$

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

This is slope-point form.

Where you have the slope and a point on the line.

Jan 26-8:51 PM

Use slope-point form to write an equation of the line through (3,-4) with slope 2. Then express the equation in slope-intercept form and graph the line on your calculator.

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

$y + 4 = 2(x - 3)$ slope-point form.

$-4 \quad -4$

$y = 2(x-3) - 4$

$y = 2x - 6 - 4$

$y = 2x - 10$ → slope-intercept form

$-y \quad -y$

$0 = 2x - y - 10$ general form

Jan 26-8:57 PM

Use slope-point form to write an equation of the line through (-5,2) and (-2,1). Rewrite the equation in slope-intercept form and general form.

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $y - y_1 = m(x - x_1)$

$m = \frac{1-2}{-2+5}$ $y-2 = -\frac{1}{3}(x+5)$ $y-1 = -\frac{1}{3}(x+2)$

$m = \frac{-1}{3}$ $y = -\frac{1}{3}(x+5)+2$ $y = -\frac{1}{3}(x+2)+1$

$y = -\frac{1}{3}x - \frac{5}{3} + 2$ $y = -\frac{1}{3}x - \frac{2}{3} + 1$

$y = -\frac{1}{3}x - \frac{5}{3} + \frac{6}{3}$ $y = -\frac{1}{3}x - \frac{2}{3} + \frac{3}{3}$

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

Jan 26-9:03 PM

Hmwk: Pg 377 #1, 2a, 3ac, 4, 6ace, 10, 11, 12, 13, 17

Jan 26-9:13 PM

7.4 Parallel and Perpendicular lines

Jan 31-3:19 PM

Parallel lines have the same slope but different intercepts.

Perpendicular lines are **negative reciprocals** of each other. The product of negative reciprocals is -1. Vertical lines with undefined slope and horizontal lines with slope of 0 are also perpendicular. $m_1(m_2) = -1$

Jan 31-6:51 PM

State whether the lines in each pair of parallel, perpendicular, or neither.

$y = 3x - 6$

$y = -\frac{1}{3}x + 4$

$m_1 (m_2)$

$3\left(-\frac{1}{3}\right) = -1$

perpendicular.

$y = 4x + 3$

$y = 4x - 5$

parallel

slopes are the same

Jan 31-6:54 PM

Write the equation of a line that is parallel to 2x-y+4=0 and through point (1,-6). Express the equation in slope-intercept form.

1. Find the slope of the equation given
2. Use slope-point form to get an equation
3. Convert to slope-intercept form.

1. x_1, y_1

$2x - y + 4 = 0$

$+y \quad +y$

$2x + 4 = y$

Slope = 2

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

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

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

3. $y + 6 = 2(x - 1)$

$y + 6 = 2x - 2$

$y = 2x - 2 - 6$

$y = 2x - 8$

Jan 31-6:57 PM

as you need

Hmwk: Pg 390 #1-9, 12

(home)work Section 7.4:

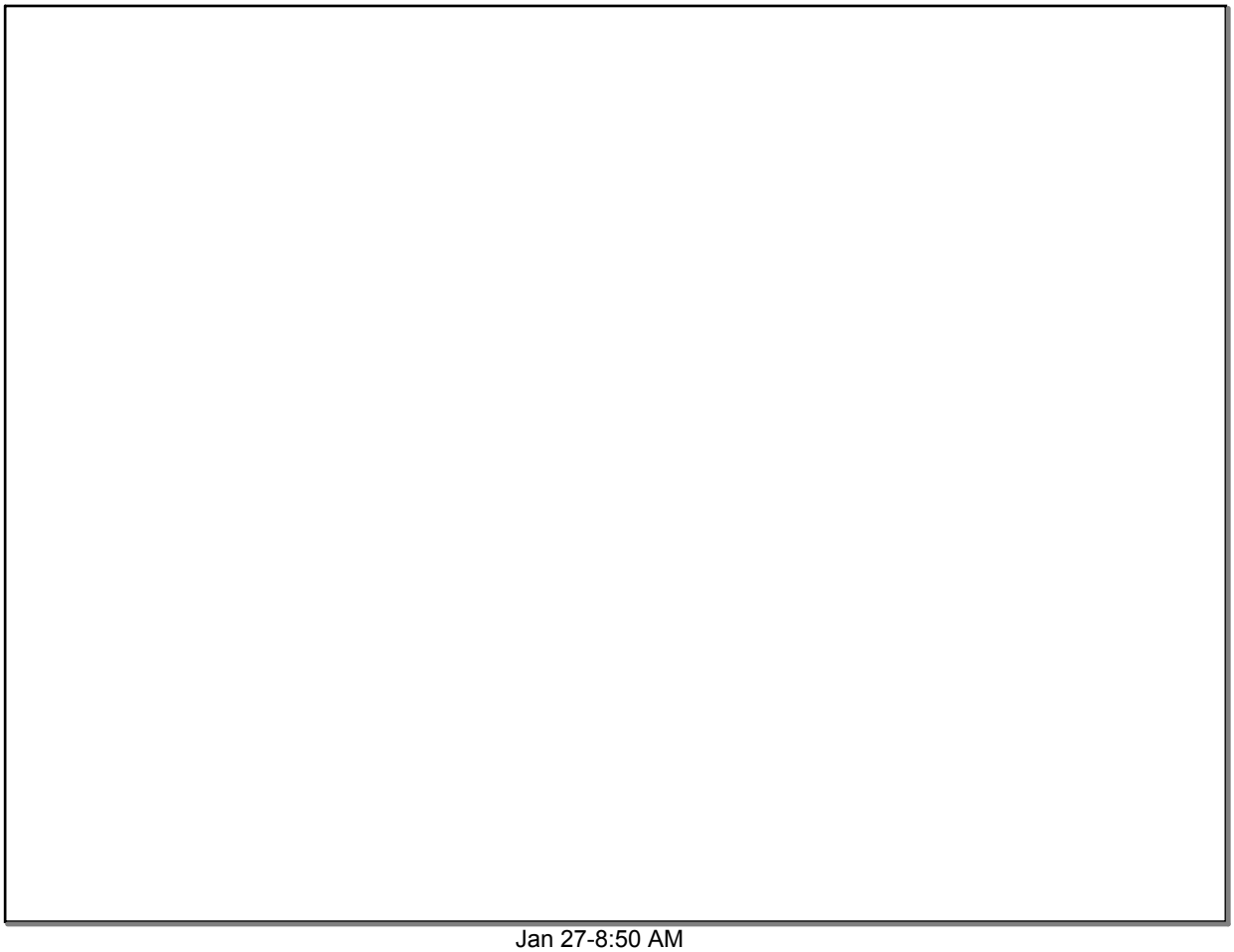
Pg 392 # 11, 13, 15, 16, 19, 20, 25

Start Reviewing Ch 7

do all

Jan 31-7:06 PM

Jan 31-7:11 PM



Jan 27-8:50 AM