Feb 5/2010

Review - Part 3

Linear Relationships

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Evaluate (2x - 1) for
- a) x = 0
- b) x = 1
- c) x = 2

a) $2(0)-1=-1$

b) $2(1)-1=1$

c) $2(2)-1=3$

Each value of x will produce a different value for (2x - 1).

We can graph the relationship between x and (2x - 1) by letting y = 2x - 1.

Each pair (x, y) is a point on the x-y plane.

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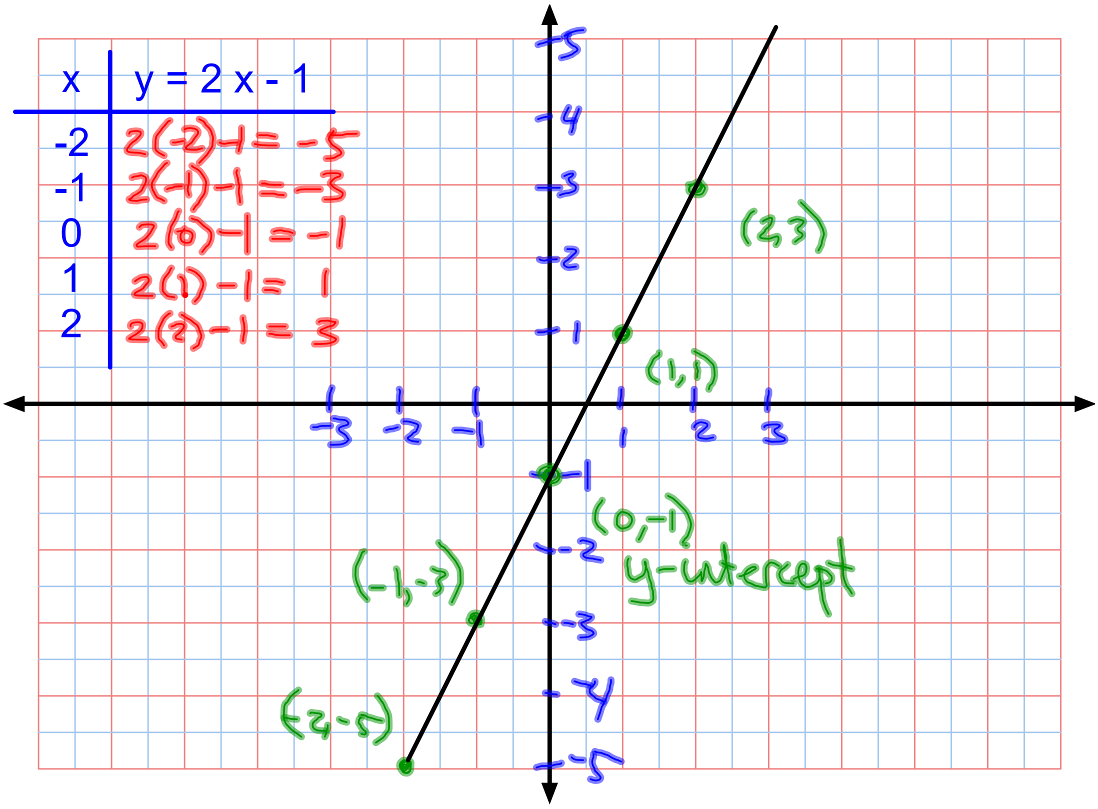
x	y = 2 x - 1
-2	2(-2)-1 = -5
-1	2(-1)-1 = -3
0	2(0)-1 = -1
1	2(1)-1 = 1
2	2(2)-1 = 3



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A <u>linear relationship</u> occurs when both variables are <u>linear</u> (they have an exponent of 1).

(a) $y = 2x - 1$ (b) $2x - y - 1 = 0$ (c) $2x - y = 1$

slope-intercept form Standard form

It is possible to graph a linear relationship using:

✓(1) a table of values

(2) the y-intercept and x-intercept

(3) the y-intercept and the slope

To graph a straight line, only **two points** are required.

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Using the intercepts:

The x-intercept is the point where the line crosses the x-axis

The y-intercept is the point where the line crosses the y-axis.

$2x - y - 1 = 0$

To find the x-int, set $y=0$

$2x-(0)-1=0$

$+1 \quad +1$

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

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

$(\frac{1}{2},0)$

To find the y-int, set $x=0$

$2(0)-y-1=0$

$-y-1=0$

$+1 \quad +1$

$\frac{-y}{-1}=\frac{1}{-1}$

$y=-1$

$(0,-1)$

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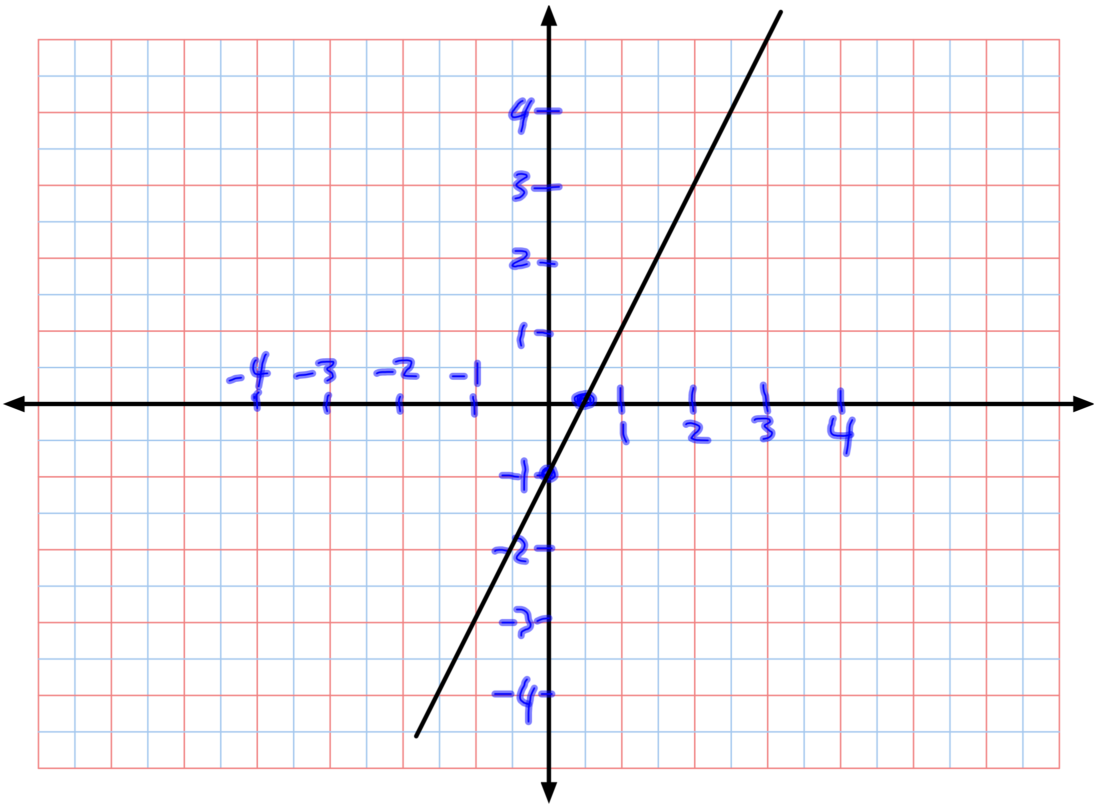

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Using the y-intercept and slope:

"change in y"

Recall:

$$m = \text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x}$$

"change in x"

The y-int is our starting point, and we use the slope to find the next point.

A linear equation in slope-intercept form is

$$y = \underbrace{m}_{\text{slope}} x + \underbrace{b}_{\text{y-intercept}}$$

Δ is the Greek letter "Delta", and it stands for "change in"

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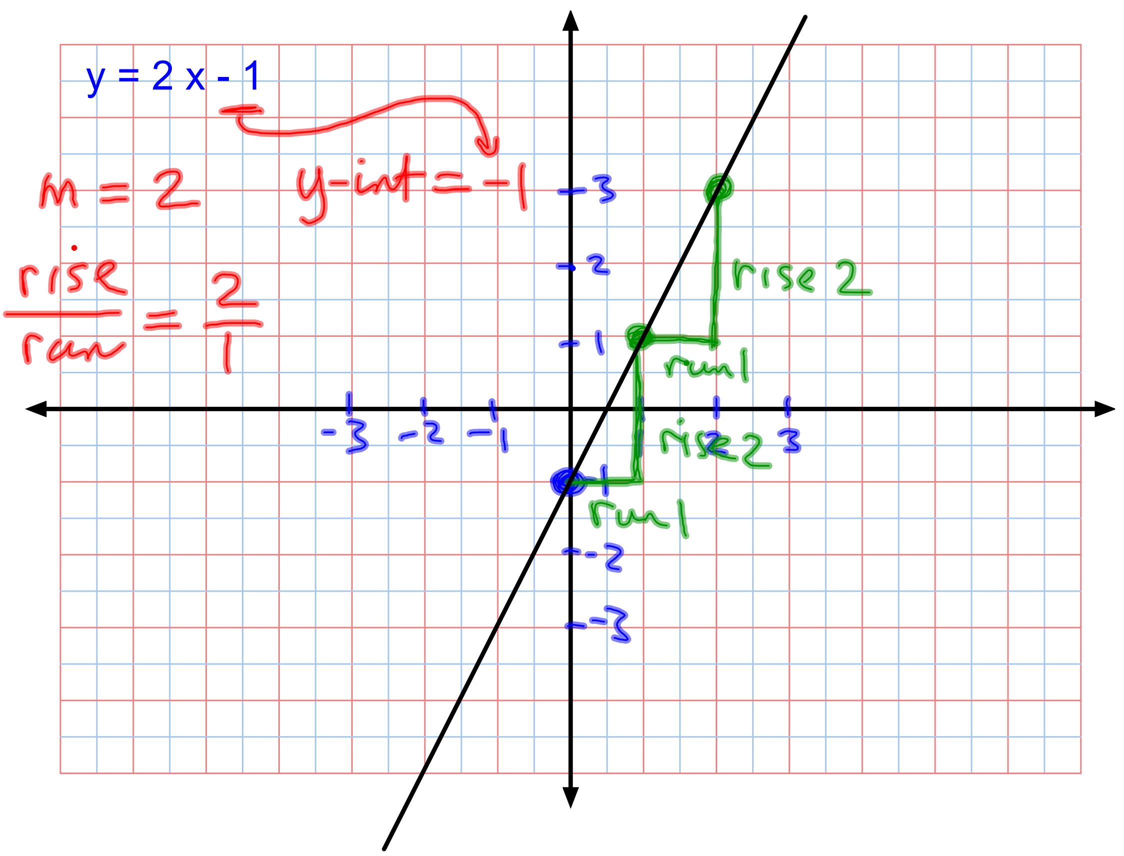

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Assigned Work:

(odd letters only)
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