

BE - Geometry I | Monday 9-13-10

1. Simplify and name the exponent rule used to simplify:

(A) $x^5 x^8 x^2$

(B) $\frac{x^8}{x^5}$

(C) $(7x^3)^0$

(D) 4^{-2}

(E) $(c^5)^7$

(F) $\left(\frac{4x}{5y}\right)^2$

ANS)

(A) $x^{15} \Rightarrow MR \Rightarrow$ ADD exponents

(B) $x^3 \Rightarrow DR \Rightarrow$ subtract exponents (top-bottom)

(C) $1 \Rightarrow ZER \Rightarrow (\text{anything})^0 = 0$
EXCEPT $0^0 = 0$

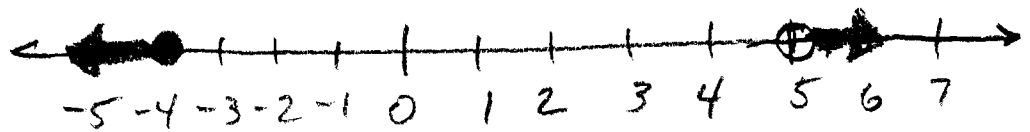
(D) $\frac{1}{16} \Rightarrow NER \Rightarrow a^{-N} = \frac{1}{a^N}$ OR $\frac{1}{a^{-N}} = a^N$

(E) $c^{35} \Rightarrow PPR \Rightarrow$ MULT. EXPONENTS

(F) $\frac{16x^2}{25y^2} \Rightarrow GPR \Rightarrow$ bring exponent into each term.

Compound Inequalities (more than 1)

(EX) $x - 4 > 1$ OR $2x + 2 \leq -6$
 $+4$ $+4$ -2 -2
 $x > 5$ $2x \leq -8$
 $x > 5$ OR $x \leq -4$

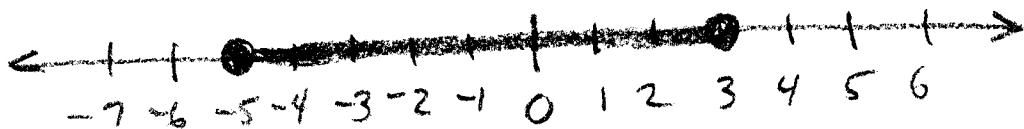


(EX) $-3 \leq x + 2$ AND $x + 2 \leq 5$

↓
 MAY USE
 SHORT WAY
 TO WRITE "AND"
 $-3 \leq x + 2 \leq 5$
 ↓

-2 -2 -2 -2

$-5 \leq x$
 $x \geq -5$ AND $x \leq 3$



QUADRATIC EQUATIONS \Rightarrow X to second power

\Rightarrow 2 solutions

\Rightarrow CAN solve using factoring (sometimes) or completing the square (OR QF) (ALWAYS)

$ax^2 + bx + c = y$

STANDARD FORM of QUADRATIC FUNCTION

Linear EQUATIONS \Rightarrow X to first power

\Rightarrow 1 solution

\Rightarrow use "undos" to solve.

$mx + b = y$

\Rightarrow $y = mx + b$ SLOPE-INTERCEPT FORM

\uparrow
slope

\uparrow
y coordinate of (0, b) = where line crosses

(intercepts) the y axis

\uparrow
y-intercept

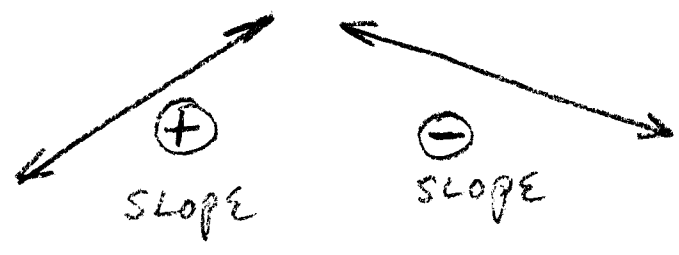
$Ax + By = C$

STANDARD FORM

$A \geq 0$ (POSITIVE)

A, B, C, integers

SLOPE = m = MEASURE OF "STEEPNESS" OF A LINE



Two very important SPECIAL CASES:



$m = 0$

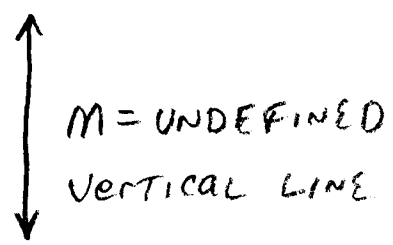
horizontal line

$y = m^{\rightarrow}x + b$

$y = b$

- (EX) $y = 4$
- (EX) $y = -2$
- (EX) $y = \pi$

x	y
ANY	4
	4
	4
	⋮



- (EX) $x = 4$
- (EX) $x = -2$
- (EX) $x = \pi$

x	y
4	ANY
4	
4	
⋮	

PARALLEL LINES \Rightarrow SAME SLOPE

$$y = 2x + 3$$

$$y = 2x - 4$$

$$y = 2x + 7$$

$$m_{\parallel} = 2$$

PERPENDICULAR LINES \Rightarrow SLOPE ARE RECIPROCAL
(CROSS AT 90°) AND OPPOSITE IN SIGN

$$\textcircled{\text{EX}} \quad y = 2x + 3$$



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

$$\begin{array}{l} \text{ALL} \\ \text{PERPENDICULAR} \\ \text{TO} \\ y = 2x + 3 \end{array} \left\{ \begin{array}{l} y = -\frac{1}{2}x + 6 \\ y = -\frac{1}{2}x - 3 \\ y = -\frac{1}{2}x + 9 \end{array} \right.$$

IF $b = 0$ the line is called a

Direct Variation \Rightarrow line of any slope
PASSING THROUGH ORIGIN.

Basic Algebra problems:

Find equation of line THROUGH

$(-2, -1)$ and $(1, 5)$

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

$$(-2, -1), (1, 5)$$

x, y

$$m = \frac{5 - (-1)}{1 - (-2)} = \frac{6}{3} = 2 = m$$

$$y = mx + b$$

$$5 = 2(1) + b$$

$$5 = 2 + b$$

$-2 \quad -2$

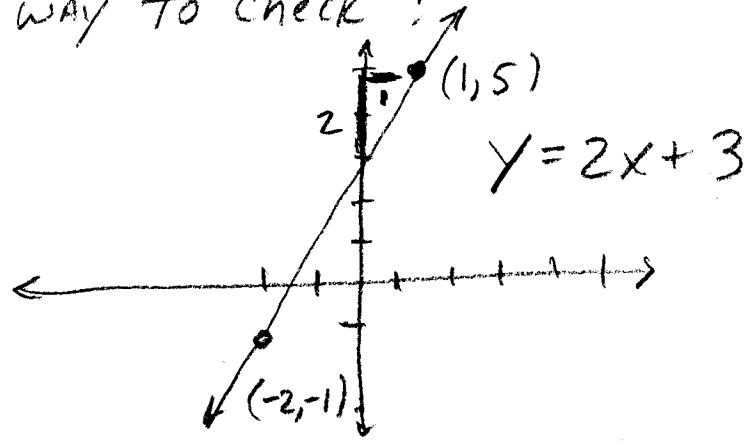
$$3 = b$$

$$\therefore y = mx + b$$

$$y = 2x + 3$$

I call this the "y=mx+b twice" method

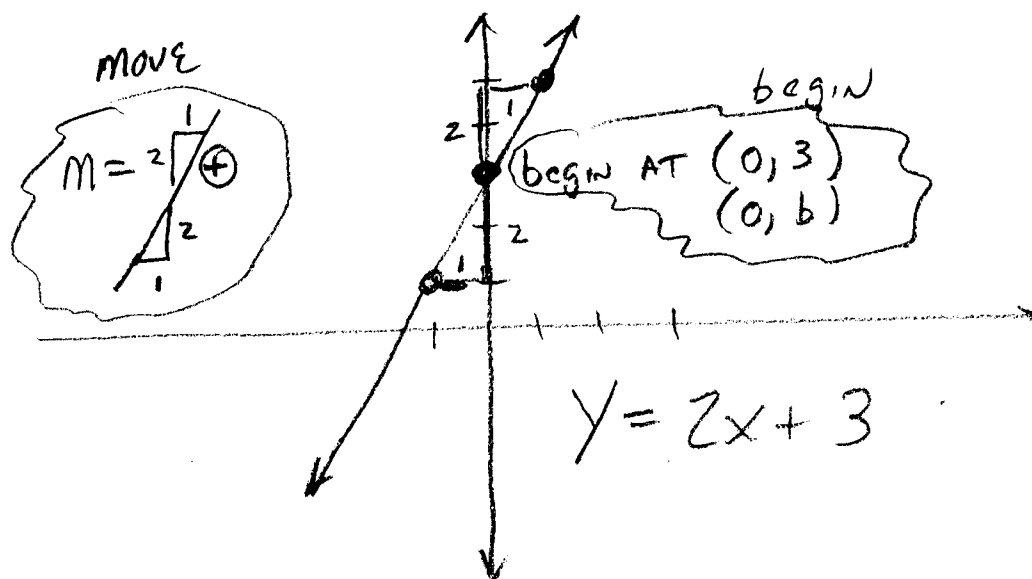
Any way to check?



How to graph $y = 2x + 3$

$$y = mx + b$$

begin at "b"
then MOVE by slope



Practice Worksheet - 16 problems

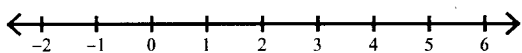
CLASSWORK

HW = ANY NOT FINISHED IN CLASS.

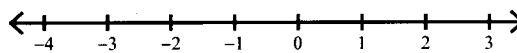
HW Practice

Solve each compound inequality and graph its solution.

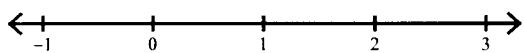
1) $4b - 3 > 5b - 4$ or $5b - 1 > 5 + 3b$



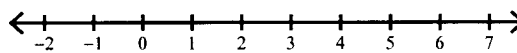
2) $x + 1 \leq 6x + 6$ and $4 + 5x > 6x + 3$



3) $x - 6 < 5x - 6 < 3x - 4$



4) $3v - 3 \leq 2 + 2v \leq 6v + 6$



Write the slope-intercept form of the equation of the line through the given points.

5) through: $(0, 1)$ and $(5, 4)$

6) through: $(0, 2)$ and $(1, 0)$

7) through: $(-1, -5)$ and $(0, 2)$

8) through: $(-3, -4)$ and $(0, 1)$

9) through: $(0, 5)$ and $(3, -1)$

10) through: $(-4, 3)$ and $(0, 4)$

Write the slope-intercept form of the equation of the line described.

11) through: $(2, 5)$, parallel to $y = \frac{9}{2}x + 5$

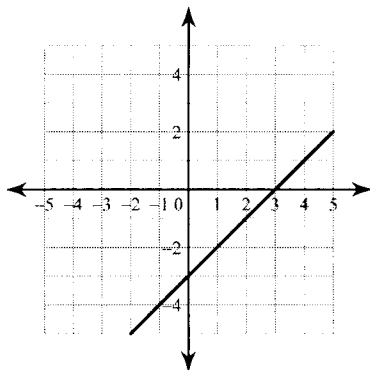
12) through: $(5, -2)$, parallel to $y = \frac{3}{5}x + 5$

13) through: $(-1, 1)$, perp. to $y = \frac{1}{4}x + 5$

14) through: $(-4, -3)$, perp. to $y = -4x + 4$

Write the slope-intercept form of the equation of each line.

15)



16)

