BE - Geometry 11

Thursday 9-15-11

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} ⇒ MR ⇒ ADD EXPONENTS

(B) x^3 ⇒ DR ⇒ subtract exponents (top − bottom)

(C) 1 ⇒ ZER ⇒ (ANYTHING)^0 = 0

EXCEPT $0^0 = 0$

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

(E) c^{35} ⇒ PPR ⇒ MULT. EXPONENTS

(F) $\frac{16x^2}{25y^2}$ ⇒ GPR ⇒ bring exponent INTO EACH term.

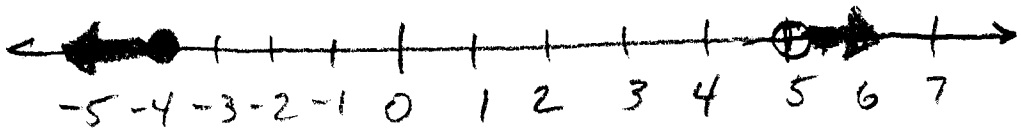
Compound Inequalities (more than 1)

(Ex) $x - 4 > 1$ **OR** $2x + 2 \leq -6$

$+4 \quad +4$ | $-2 \quad -2$

$x > 5$ | $2x \leq -8$

OR $x \leq -4$



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

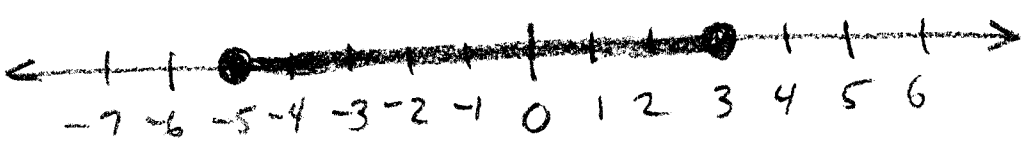
MAY USE SHORT WAY TO WRITE "AND"

$-3 \leq x + 2 \leq 5$

$-2 \quad -2$ | $-2 \quad -2$

$-5 \leq x$

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



QUADRATIC EQUATIONS ⇒ X to second power
⇒ 2 solutions
⇒ can solve using factoring (sometimes) or completing the square (OR QF) (always)

$ax^2+bx+c=y$

STANDARD Form of QUADRATIC FUNCTION

Linear EQUATIONS ⇒ X to first power
⇒ 1 solution
⇒ use "undos" to solve.

$mx+b=y$

⇒ $y=mx+b$ SLOPE-INTERCEPT Form

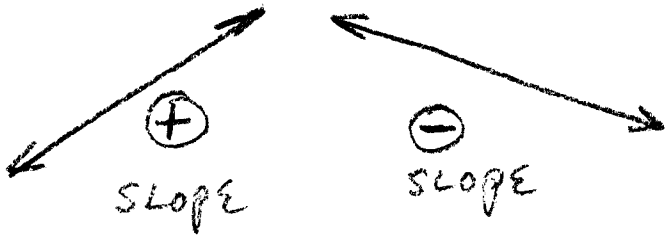
slope

y coordinate of (0, b) = where line crosses (intercepts) the y Axis

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

$y = \cancel{m}^{\,0}x + b$

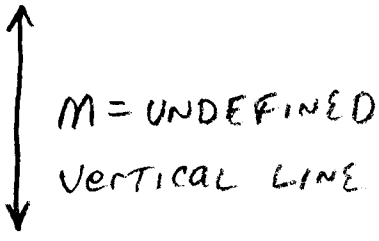
$y = b$

(EX) $y = 4$

(EX) $y = -2$

(EX) $y = \pi$

X	Y
ANY	4
	4
	4
	⋮



m = UNDEFINED

VERTICAL LINE

(EX) $x = 4$

(EX) $x = -2$

(EX) $x = \pi$

X	Y
4	ANY
4	
4	
⋮	

PARALLEL LINES ⇒ SAME SLOPE

$y = 2x + 3$

$y = 2x - 4$

$y = 2x + 7$

$m_{\parallel} = 2$

PERPENDICULAR LINES ⇒ SLOPE ARE RECIPROCALS AND OPPOSITE IN SIGN
(CROSS AT 90°)

(EX) $y = 2x + 3$

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

ALL PERPENDICULAR TO $y = 2x + 3$

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

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

$y = -\frac{1}{2}x + 9$

IF $b = 0$ the LINE is called A

Direct Variation ⇒ LINE of ANY SLOPE PASSING THROUGH ORIGIN.

Basic Algebra problem:

Find equation of line through

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

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

$(-2, -1), (1, 5)$ $\quad m = \dfrac{5+1}{1+2} = \dfrac{6}{3} = 2 = m$

x, y

$y = mx + b$

$5 = 2(1) + b$

$5 = 2 + b$

$-2 \quad -2$

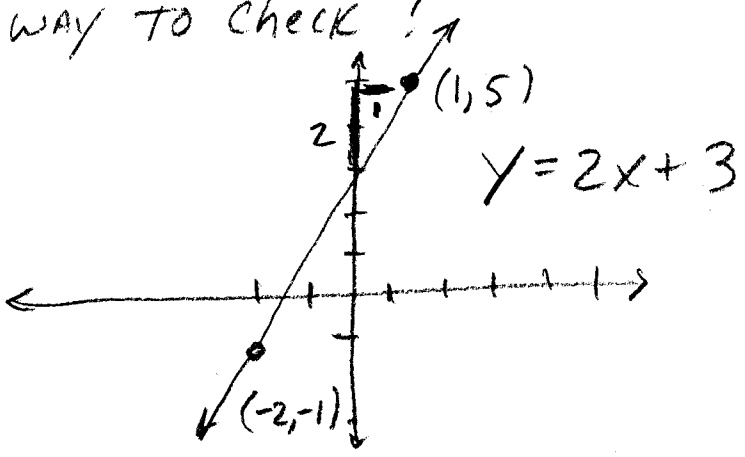
$3 = b$

$\therefore y = mx + b$

$y = 2x + 3$

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

Any way to check?

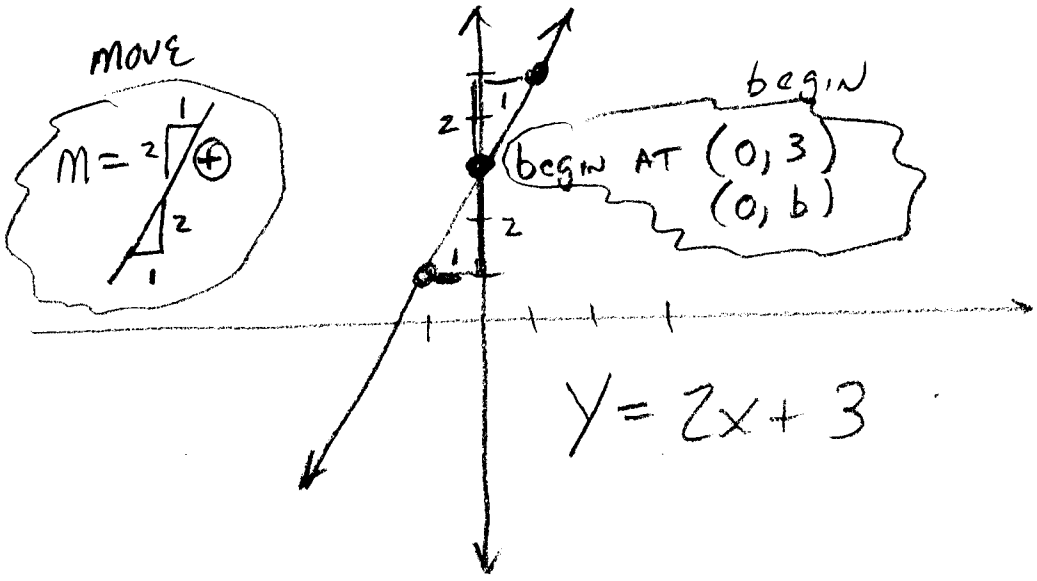


How to graph $y = 2x + 3$

$y = mx + b$

begin at "b"

then Move by slope



Practice Work sheet - 16 problems

Classwork - odds

HW = evens (due Mon.)