

SEMESTER REVIEW

Natural - N 1, 2, 3, ...

Whole - W 0, 1, 2, ...

Integers - Z -3, -2, -1, 0, 1, 2, ...

Imaginary - $\sqrt{-1}$, $3i$

Complex - $7+2i$, $6+0i$
 $5-3i$, $0+8i$

Rational Q = fractions or terminating/repeating decimals
 $\frac{2}{3}$, -3.25 , $2.\bar{6}$, $\frac{4}{1}$

Irrational I - non-term. nor-repeating decimals
 π , e , $\sqrt{7}$

Real R = all Rational + Irrational #'s

$$-\frac{54}{9} = -6 \quad Z, Q, R, C$$

Sig Digits

4,000,200 in. 5

0.0000290 m

$$1 \text{ mi} = 5280 \text{ ft.}$$

$$320 \frac{\text{km}}{\text{hr}} \text{ to } \frac{\text{m}}{\text{min}}$$

$$320 \frac{\text{km}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1000 \text{ m}}{1 \text{ km}}$$

$$\frac{320 \cdot 1000}{60} = \frac{1600}{3} = 1600 \frac{\text{m}}{3 \text{ min}}$$

Functions - Graph - Vertical line test
 - Coord. - x's cannot repeat

$$15 \left[\frac{2}{3} \cdot (4x+3) = \frac{2}{5}x - 4 \right]$$

* by common denom.

$$10(4x+3) = 6x - 60$$

$$40x + 30 = 6x - 60$$

$$\begin{array}{r} 40x + 30 \\ -6x \\ \hline 34x = -90 \end{array}$$

$$\frac{34x}{34} = \frac{-90}{34}$$

$$x = \frac{-45}{17}$$

$$\frac{x}{2} + \frac{x-4}{x+3} = \frac{5}{x-2}$$

$$\begin{aligned} \text{a) } & 2 \begin{bmatrix} 3 & -4 \\ 5 & 6 \end{bmatrix} - 4 \begin{bmatrix} 7 & 0 \\ -1 & 3 \end{bmatrix} \\ &= \begin{bmatrix} 6 & -8 \\ 10 & 12 \end{bmatrix} + \begin{bmatrix} -28 & 0 \\ 4 & -12 \end{bmatrix} \\ &= \begin{bmatrix} -22 & -8 \\ 14 & 0 \end{bmatrix} \end{aligned}$$

$$\begin{bmatrix} 4 & -2 \\ 3 & 5 \\ 8 & 0 \end{bmatrix} \cdot \begin{bmatrix} 2 & -1 & 6 \\ 4 & 0 & 7 \end{bmatrix} = \begin{bmatrix} 8 + -8 & -4 + 0 & 24 + -14 \end{bmatrix}$$

$$3 \times (2 \text{ sum } 2) \times 3 = \begin{bmatrix} 0 & -4 & 10 \end{bmatrix}$$

LINES

Slope-int
 $y = mx + b$

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

Horizontal
 $y = \# \quad m = 0$

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

Vertical
 $x = \# \quad m = \text{undefined}$

Standard form
 $Ax + By = C$
 $m = -\frac{A}{B}$

Write eq. of the line

\perp to $5x - 3y = 8$

& passes through $(-1, 2)$

$$m = \frac{+5}{+3}$$

$$\perp m = -\frac{3}{5}$$

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

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

Simplify to $y =$

Inequalities

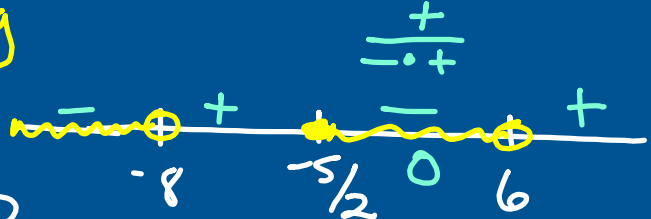
$$\frac{-5x}{-5} < \frac{20}{-5}$$

$$x > -4$$

Like
14b

$$\frac{2x+5}{(x-6)(x+8)} \leq 0 \quad \text{need solution}$$

Testing
pts.



$$2x+5=0$$

$$2x=-5$$

$$x = -\frac{5}{2}$$

$$x < -8 \quad \text{OR} \quad -\frac{5}{2} \leq x < 6$$

$$\frac{4-3|x+1|}{-4} > \frac{-11}{-4}$$

$$\frac{-3|x+1|}{-3} > \frac{-15}{-3}$$

$$|x+1| < 5$$

$$x+1 < 5 \quad \text{AND} \quad x+1 > -5$$

$$x < 4 \quad \text{and} \quad x > -6$$



$$-6 < x < 4$$

Abs value

- 1) Isolate the abs value
- 2) Write + solve 2 inequalities
- 3) Graph on # line to find solution

Less Than AND
Greater OR

AND = overlap
OR = anything shaded