

SEMESTER REVIEW - Day 1

$$N = 1, 2, 3, \dots$$

$$W = 0, 1, 2, 3$$

$$Z = -3, -2, -1, 0, 1, 2, 3$$

$$Q = \frac{2}{3}, 1.75\overline{6}, 4$$

$$I = \pi, \sqrt{2}, \sqrt{5}, e$$

$$\mathbb{R} = \mathbb{Q} + I$$

$$i = \sqrt{-1}, \sqrt{-7}$$

$$C = 3 + 2i, \quad 8, \quad -4i$$

$$\quad \quad \quad 8 + 0i, \quad 0 - 4i$$

$$7) \quad f(x) = \frac{x^2 - 1}{x + 2}$$

$$f(-3) = \frac{(-3)^2 - 1}{-3 + 2} = \frac{9 - 1}{-1} = \frac{8}{-1} = -8$$

Sig Digits

$$\underline{702},000 \quad 3$$

$$0.0\underline{150} \text{ cm } 3$$

Convert units

$$\frac{\text{in}}{\text{min}} \quad \text{to} \quad \frac{\text{ft}}{\text{hr}}$$

$$240 \frac{\cancel{\text{in}}}{\cancel{\text{min}}} \cdot \frac{1 \text{ ft}}{12 \cancel{\text{in}}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

$$= \frac{240 \cdot 60}{12} = 1200 \frac{\text{ft}}{\text{hr}}$$

8/ Solve. - * by common denom

$$12 \left[\frac{3}{4} x - 1 = \frac{2}{3} + 4x \right]$$

$$\begin{array}{rcl} 9x - 12 & = & 8 + 48x \\ -9x - 8 & & -9x \end{array}$$

$$\frac{-20}{39} = \frac{\cancel{8}9x}{\cancel{39}}$$

9 Matrix

$$\begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix} + 2 \begin{bmatrix} 7 & 10 \\ 8 & 11 \\ 9 & 12 \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix} + \begin{bmatrix} 14 & 20 \\ 16 & 22 \\ 18 & 24 \end{bmatrix}$$

$$= \begin{bmatrix} 15 & 24 \\ 18 & 27 \\ 21 & 30 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 3 \\ 4 & -1 \\ 5 & 7 \end{bmatrix} \cdot \begin{bmatrix} 3 & 5 \\ -2 & 0 \end{bmatrix}$$

$3 \times 2 \quad 2 \times 2$

$$= \begin{bmatrix} 6 + -6 & 10 + 0 \\ 12 + 2 & 20 + 0 \\ 15 + -14 & 25 + 0 \end{bmatrix}$$

$$= \begin{bmatrix} 0 & 10 \\ 14 & 20 \\ 1 & 25 \end{bmatrix}$$

LINES

Standard

$$Ax + By = C$$

$$m = -\frac{A}{B}$$

* Slope-int

$$y = mx + b$$

* point-slope

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

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

Horiz

$$m = 0$$

$$y = \#$$

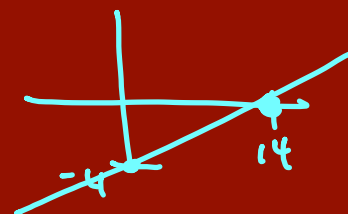
Vertical

$$m = \text{undef}$$

$$x = \#$$

Graph $2x - 7y = 28$

$$\begin{array}{r|l} x\text{-int} & 14 \quad 0 \\ y\text{-int} & 0 \quad -4 \end{array}$$



Write the eq. of
the line $\perp$ to $5x - 2y = 3$
+ passes through $(-1, 4)$

$$m = -\frac{A}{B} = -\frac{5}{-2} = \frac{5}{2} \quad \perp m = -\frac{2}{5}$$

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

$$y - 4 = -\frac{2}{5}(x + 1)$$

$$y - 4 = -\frac{2}{5}x - \frac{2}{5}$$

+4

+4

$$y = -\frac{2}{5}x + \frac{18}{5}$$

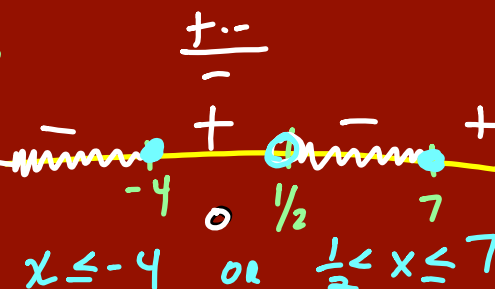
12 Given word; use point-slope

Given start pt + rate, use
Slope-int

Like 14(b)

$$\frac{(x+4)(x-7)}{2x-1} \leq 0$$

Need negative solutions



$$\begin{aligned}
 x+4 &= 0 \\
 x &= -4 \\
 x-7 &= 0 \\
 x &= 7
 \end{aligned}$$

$$\begin{aligned}
 2x-1 &= 0 \\
 2x &= 1 \\
 x &= \frac{1}{2}
 \end{aligned}$$

If variables $\neq 0$;
Test points!

$$5 - 2|3x+1| > -5$$

$$-2|3x+1| > -10$$

$$|3x+1| < 5$$

switch

change both

$$3x+1 < 5 \text{ AND } 3x+1 > -5$$

$$3x < 4$$

$$x < \frac{4}{3}$$

$$3x > -6$$

$$x > -2$$

$$-2 < x < \frac{4}{3}$$

1) Isolate the abs value

2) Write & solve 2 eq

3) Graph & write result

AND = must cross

OR = Everything shaded