

## Today's Plan:

**Learning Target (standard):** I will review for the semester exam.

**Students will:** Complete practice problems over previous concepts at the boards and study for my exam.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of exam problems.

**Assessment:** Board work

**Differentiation:** Students will work at the board, actively engage in practice review concepts with the aid of other students and the teacher.

Graph using the 5-step process:

$$f(x) = -4x^3 - 8x^2$$

$$f(x) = -4x^2(x+2)$$

① degree: 3

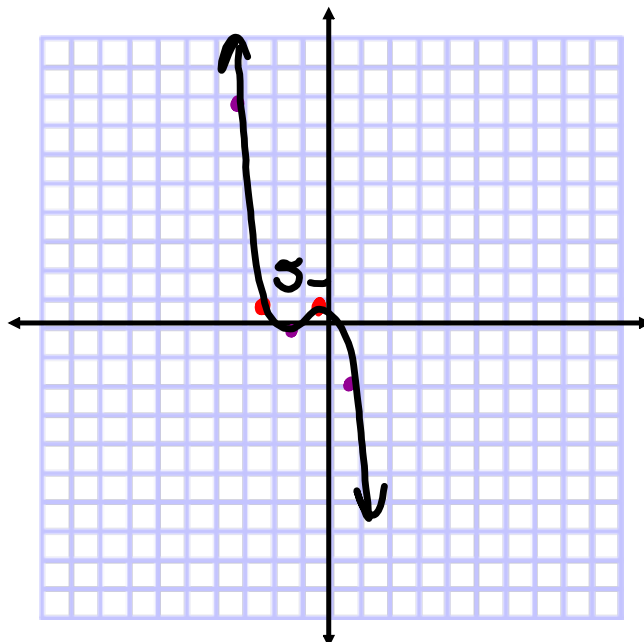
MTP: 2

I<sub>x</sub>: (0,0), (-2,0)I<sub>y</sub>: (0,0)

② zeros:

x=0 mult. 2 → touches  
x-axisx=-2 mult. 1 → crosses  
x-axis③ EB:  $f(x) = -4x^3$ up on left  
down on right

④	$-4x^2$	-	:	-	0	-
			:		:	
	$x+2$	-	0	+	:	+
test	point	$-3$	$-2$	$-1$	$0$	$1$
	f(x)	$(-3, 36)$	$(-1, -4)$	$(1, -12)$		
		above	below	below		



Graph using the 7-step process.

$$G(x) = \frac{x^3 + 1}{x^2 + 2x} \quad 1) \mathcal{D}: \{x \mid x \neq -2, 0\}$$

$$G(x) = \frac{(x+1)(x^2-x+1)}{x(x+2)} \quad 2) \mathcal{I}_x: (-1, 0)$$

$$\mathcal{I}_y: -$$

3) Symmetry:

$$G(-x) = \frac{(-x)^3 + 1}{(-x)^2 + 2(-x)}$$

$$G(-x) = \frac{-x^3 + 1}{x^2 - 2x}$$

$\therefore$  neither

$$f(-x) \neq f(x)$$

$$f(-x) \neq -f(x)$$

4) Undefined Behavior:

VA:  $x = -2, x = 0$

Hde:  $-$

5) End Behavior:

HA:  $-$

$$x^2 + 2x \sqrt{\frac{x-2}{x^3 + 0x^2 + 0x + 1}}$$

OA:  $y = x - 2$

$$\frac{-x^3 + 2x^2}{-2x^2 + 0x + 1}$$

EB:  $-$

$$\frac{+2x^2 + 4x}{4x + 1}$$

intersected?

$$\frac{x-2}{1} = \frac{x^3+1}{x^2+2x}$$

$$x^3 + 2x^2 - 2x^2 - 4x = x^3 + 1$$

$$x^3 - 4x = x^3 + 1$$

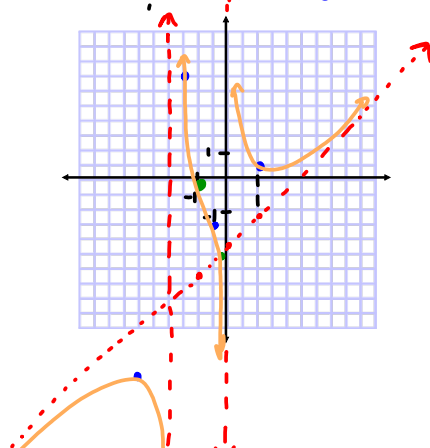
$$-4x = 1$$

$$x = -\frac{1}{4}$$

intersected @

$$\left(-\frac{1}{4}, -\frac{9}{4}\right)$$

b) $x+1$	-	-	0	+	+
$x^2-x+1$	+	+	+	+	+
$x$	-	-	-	0	+
$x+2$	-	0	+	+	+
test point	-3	-2	$-\frac{1}{2}$	$\frac{1}{2}$	1
point	$(-3, -\frac{26}{3})$	$(-\frac{1}{2}, \frac{11}{6})$	$(\frac{1}{2}, \frac{1}{6})$	$(1, \frac{3}{2})$	
$f(x)$	below	above	below	above	



State the possible rational zeros for each function. Then factor each and find all zeros.

56)  $f(x) = 2x^3 + 5x^2 + x - 2$

57)  $f(x) = 5x^3 + 11x^2 + 7x + 1$

$$p: \pm 1, \pm 2$$

$$q: \pm 1, \pm 2$$

$$\frac{p}{q}: \pm 1, \pm \frac{1}{2}, \pm 2$$

$$\begin{array}{r|rrrr} -1 & 2 & 5 & 1 & -2 \\ & & -2 & -3 & 2 \\ \hline & 2 & 3 & -2 & 0 \end{array}$$

$$f(x) = (x+1)(2x^2+3x-2)$$

$$f(x) = (x+1)(2x-1)(x+2)$$

$$\text{zeros: } x = -1, \frac{1}{2}, -2$$

58)  $f(x) = 2x^3 + 5x^2 + 4x + 1$

59)  $f(x) = 5x^3 - 29x^2 + 19x + 5$

State the possible rational roots for each equation. Then factor each and find all roots.

60)  $3x^5 - 9x^4 - 2x^3 + 6x^2 - 5x + 15 = 0$

61)  $2x^5 + 4x^4 - 5x^3 - 10x^2 - 25x - 50 = 0$

## **Merry Christmas!!**

**\* You may use a note card on your exam with any information you choose. You can write on the front and back and fill it with whatever goodies you think will help you! \***

