

Review Ditto #1: Add check for cross HA Write Equations:

pg 343: 75

$$(-\infty, -\frac{14}{3}) \cup (-3, \infty)$$

pg 345: 28

$$(-\infty, 4) \cup [\frac{13}{2}, \infty)$$

$$1. \frac{30(x+4)}{(x+1)(x-1)(x+4)} = 0$$

$$2. \frac{(x-3)}{2(x-1)(x-3)} = 0$$

$$3. \frac{2x(x-2)}{(x+3)(x-1)} = 0$$

$$3) x \rightarrow \text{int } (0,0) \quad (2,0) \rightarrow \frac{x(x-2)}{\text{num}} = 0$$

$$0 = \frac{\text{num}}{\text{den}}$$

$$\text{VA: } -3, 1 \rightarrow \text{den} = (x+3)(x-1)$$

$$\text{HA: } y=2. \quad \text{den} \sqrt{\frac{2x^2}{\text{num}}} = \frac{2x(x-2)}{(x+3)(x-1)}$$

$$\frac{2x^2}{x^2}$$

Oct 5-9:42 AM

$$28) \frac{x+1}{x-4} \leq 3$$

$$\frac{x+1}{x-4} \leq \frac{3(x-4)}{1(x-4)} \leq 0$$

$$\frac{x+1-3x+12}{x-4} \leq 0$$

$$\boxed{\frac{-2x+13}{x-4} \leq 0}$$

num	den
$-2x+13=0$	$x-4=0$
$-2x=-13$	$x=4$
$x=\frac{13}{2}$	0
(6.5)	

	0	5	10
$(-2x+13)$	+	+	-
$(x-4)$	-	+	+
	$\ominus$	$\oplus$	$\ominus$

$$\{x | x < 4 \text{ or } x \geq \frac{13}{2}\}$$

$$(-\infty, 4) \cup [\frac{13}{2}, \infty)$$

Nov 14-9:21 AM

2) $\left(3, \frac{1}{4}\right)$ VA: $x=1$ denom: $x-1$

$x=3 \rightarrow \frac{x-3}{x-3}$

~~$y = \frac{1}{x-1}$~~

$y = \frac{1 \cdot K}{x-1}$

$\frac{1}{4} = \frac{K}{3-1}$

$2 = 4K$

$K = \frac{1}{2}$

$\frac{1}{2} \cdot \frac{(x-3)}{(x-3)(x-1)} = 0$

~~$\frac{1}{2} \cdot \frac{(x-3)(x-1)}{(x-3)(x-1)} = 0$~~

Nov 14-9:15 AM

75) $\frac{x-2}{x+3} < 4$

$\frac{x-2}{x+3} - 4 < 0$

$\frac{x-2-4x-12}{x+3} < 0$

$\frac{-3x-14}{x+3} < 0$

$-3x-14 < 0$

$-3x < 14$

$x > -\frac{14}{3}$

$x < -3$

$(-\infty, -\frac{14}{3}) \cup (-3, \infty)$

num < 0 <= den

num = 0	den = 0
$-3x-14=0$	$x+3=0$
$-3x=14$	$x=-3$
$x=-\frac{14}{3}$	
(-4.6)	

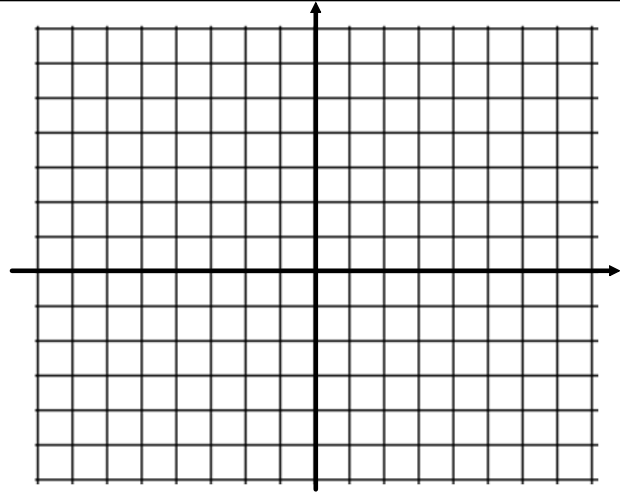
Sign chart:

	$-\frac{14}{3}$	-3	
$(-3x-14)$	+	-	-
$(x+3)$	-	-	+
num	0	0	
	$-\frac{14}{3}$	-3	
	(-4.6)		

Nov 14-7:45 AM

Warm-up by sketching #8 from Ditto 3.1. Include any hole, va, ha, x & y intercepts, **CROSS**

$$8. y = \frac{x^2 - x - 2}{2x^2 + x - 1}$$



Nov 13-4:24 PM

Warm-up by sketching #8 from Ditto 3.1. Include any hole, va, ha, x & y intercepts

$$8. y = \frac{x^2 - x - 2}{2x^2 + x - 1} = \frac{(x-2)(x+1)}{(2x-1)(x+1)}$$

reduced function
 $y = \frac{x-2}{2x-1}$
 Hole at $x = -1$
 $y = \frac{-1-2}{2(-1)-1} = \frac{-3}{-3} = 1$
 Hole at $(-1, 1)$

VA: den = 0

$$2x-1=0$$

$$x = \frac{1}{2}$$

HA: $2x-1$ $x-2$

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

x-int: $y=0$

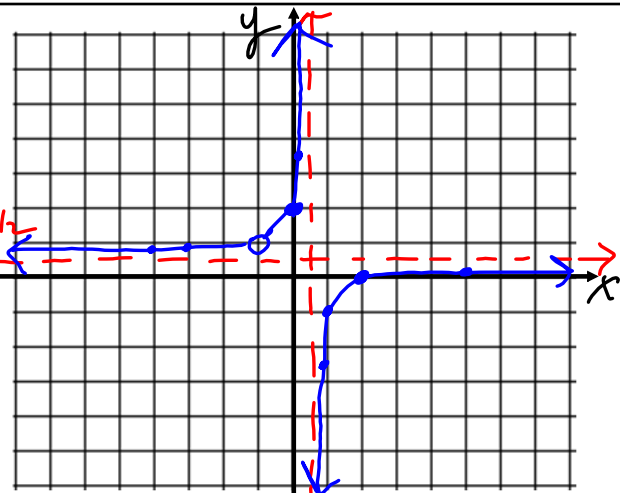
$$0 = x-2$$

$$x = 2$$

y-int: $x=0$

$$y = \frac{0-2}{0-1} = \frac{-2}{-1} = 2$$

$$y = \frac{0-2}{0-1} = \frac{-2}{-1} = 2$$

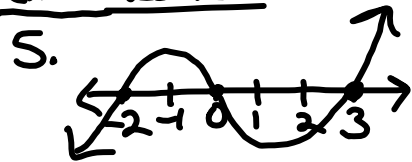


x	y
2.5	3.5
-3	.71
-4	.66

x	y
3.5	-2.5
1	-1
5	.3

Nov 13-4:24 PM

Pgs 344-345: 5, 10-12, 15-17, 21, 22, 25-28

Extra Review

10. $3x^2 + 15x + 63 + \frac{322}{x-5}$

11. -115

12. yes

15. $P(x) = x^3 + 10x^2 + 9x + 90$

16. $P(x) = x^5 - 2x^4 - x^3 + 6x^2 - 6x$

17. $\frac{P}{Q} : \pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12, \pm \frac{1}{2}, \pm \frac{3}{2}$

21a) $\{-4, \pm 2i\}$

b) $h(x) = (x+4)(x-2i)(x+2i)$

22a) $\{\frac{2}{3}, 1, 1, 1\}$

b) $P(x) = (x-1)^3(3x-2)$

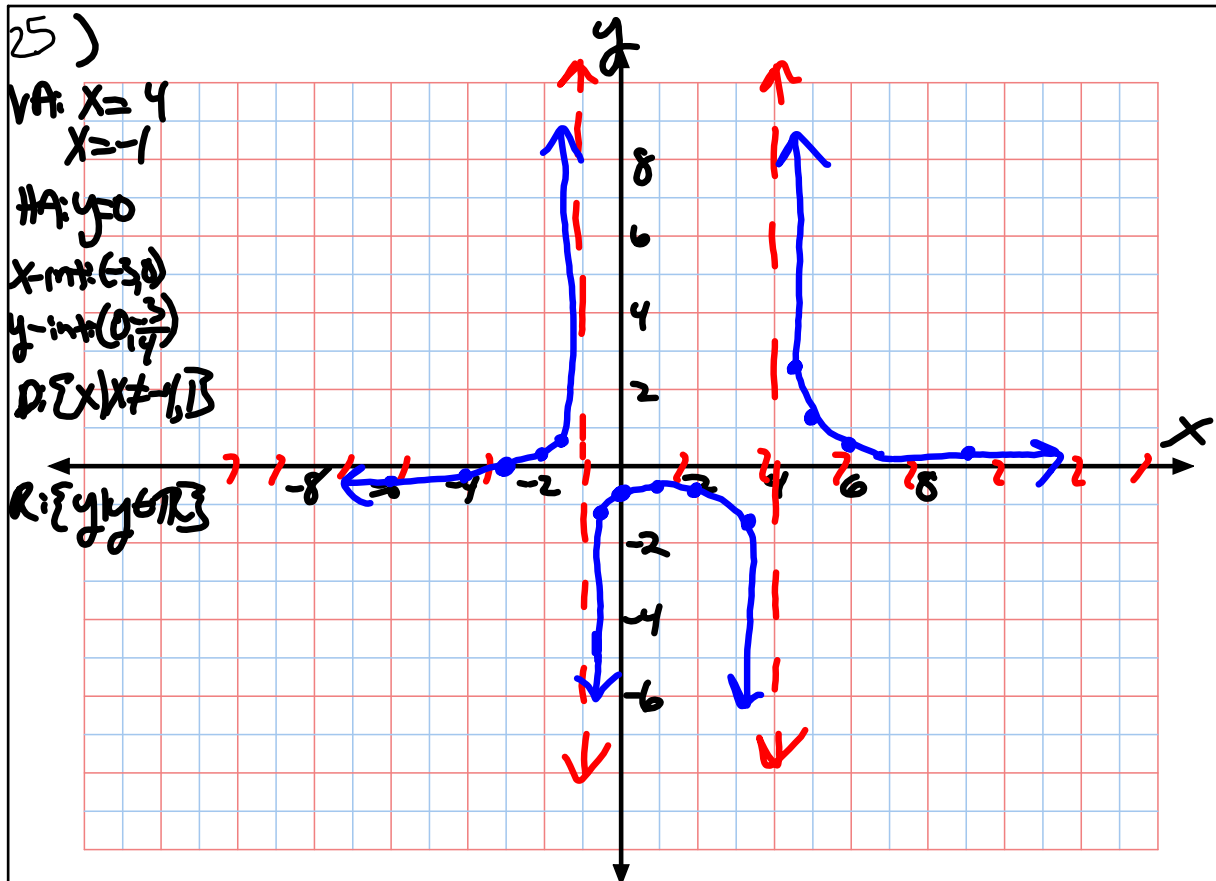
25) See next slide.

26) $P(x) = \frac{(x+4)}{(x+1)(x-2)} = \frac{x+4}{x^2-x-2}$

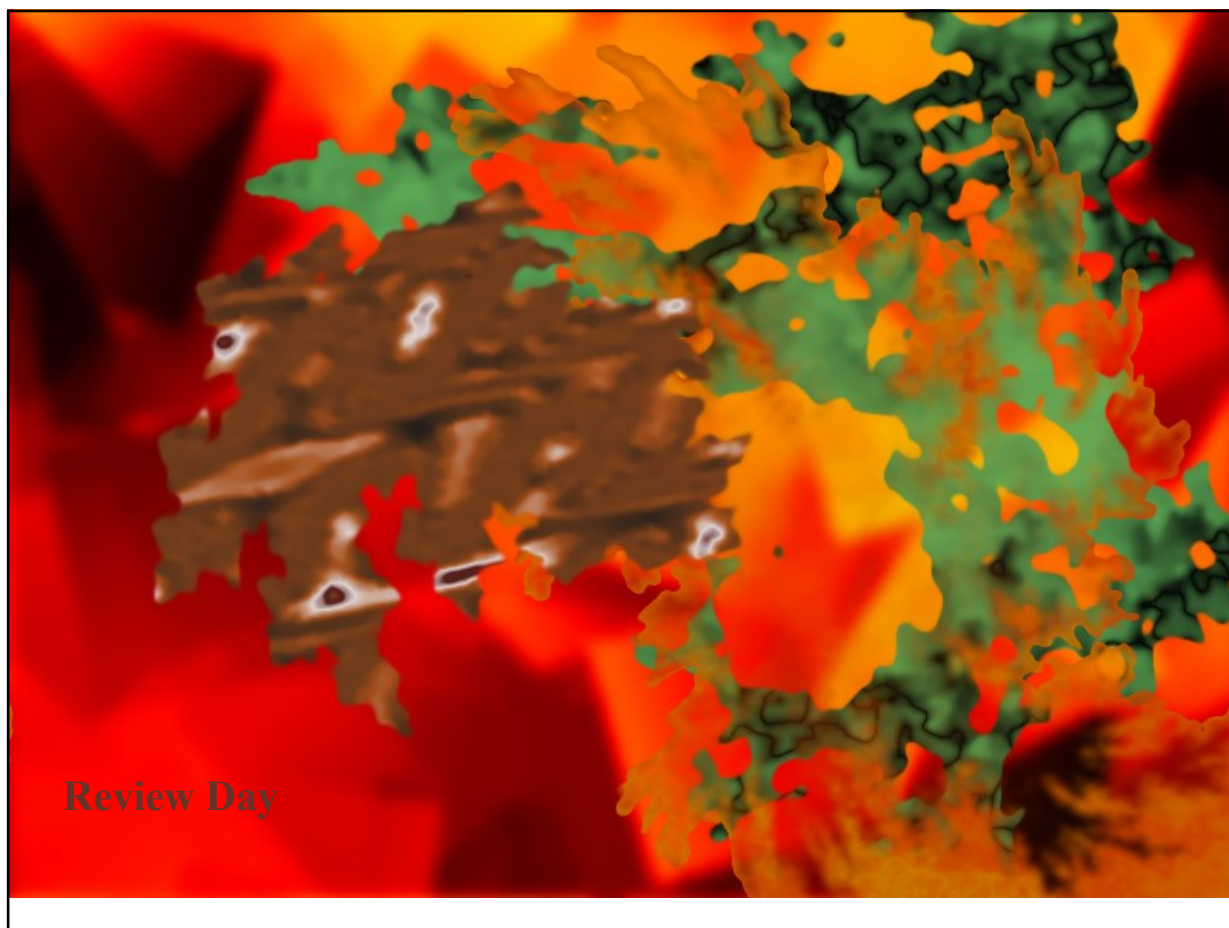
27) $\{x | x < -\frac{1}{2} \text{ or } x > 3\}$

28) $\{x | x < 4 \text{ or } x \geq \frac{13}{2}\}$

Nov 7-5:35 PM



Nov 7-5:42 PM



Nov 4-1:11 PM

1. Holes: none

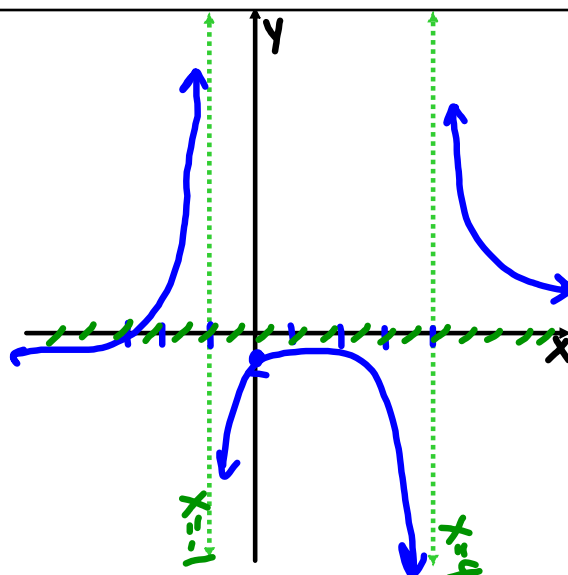
x-int: $(-3, 0)$

y-int: $(0, -\frac{3}{4})$

VA: $x = 4, x = -1$

$\textcircled{HA}$ $y = 0$

Cross? yes



Nov 2-1:29 PM

2a. $\frac{x-2}{x+3} - \frac{4(x+3)}{(x+3)} < 0$

$\frac{-3x-14}{x+3} < 0$

Num: Den
 $x = -\frac{14}{3}$ $x = -3$

	-10	-4	0
$-3x-14$	+	-	-
$x+3$	-	-	+

$(-\infty, -\frac{14}{3}) \cup (-3, \infty)$

Nov 9-7:21 AM

2b. $\frac{x-3}{x+4} \geq 5$

$\frac{x-3}{x+4} - \frac{5(x+4)}{x+4} \geq 0$

$\frac{-4x-23}{x+4} \geq 0$

Num • Den 0
 $-4x-23=0$ $x+4=0$
 $x = -\frac{23}{4}$ $x = -4$

	-100	-5	0
$-4x-23$	+	=	+
$x+4$	-	-	+

$[-\frac{23}{4}, -4)$

Oct 5-9:51 AM

3. Hole: $(2, \frac{5}{4})$

VA: $x = -2$

HA: $y = 1$

cross? No

4. $f(-2) = 0$

$\therefore$ yes

Nov 9-7:24 AM

5. $f(x) = x^3 + 2x^2 - 7x + 4$
 $\frac{p}{q} = \pm 1, \pm 2, \pm 4$

1	1	2	-7	4
	↓	1	3	-4
-4	1	3	-4	0

$x^2 + 3x - 4 = 0$

$(x+4)(x-1) = 0$

$x = -4 \quad x = 1$

$\{1, 1, -4\}$

$x - 1 = 0$

6. $1+i$ also

S: 2 $\therefore b = -2$
 P: 2 $\therefore c = 2$ } $x^2 - 2x + 2$

$0 = (x+3)(x^2 - 2x + 2)$

$0 = x^3 + x^2 - 4x + 6$

$p = 4: \pm 1, \pm 2, \pm 4$

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

$\frac{p}{q} = \pm 1, \pm 2, \pm 4$

Nov 9-7:24 AM

7. a. $f(x) = \frac{1(x-1)}{(x+2)(x-3)(x-1)}$

b. $f(x) = \frac{(x+3)}{(x+1)(x-1)}$

$$0 = \frac{2(-3+3)}{(-3+1)(-3-1)}$$

$$0 = \frac{k(0)}{(-2)(-4)}$$

c. $f(x) = \frac{3x^2}{(x-2)(x-5)}$

$$0 = k(0) \\ \therefore \underline{k=1}$$

$$y = \frac{3}{(x-2)(x-5)} \quad 3 = \frac{\text{num}}{\text{den}}$$

$$y = \frac{3x^2}{x^2-7x+10}$$

$$\text{den } x^2 \quad \text{num } 3x^2$$

HA $y=3$

c. HA = 3 $y=3$

$$y = \frac{\text{num}}{\text{den} = (x-2)(x-5)} = \frac{x^2-7x+10}{(x-2)(x-5)}$$

HA:

den
 x^2

num
 $3x^2$

$$\frac{3}{x^2}$$

Nov 9-7:26 AM

Nov 13-4:30 PM