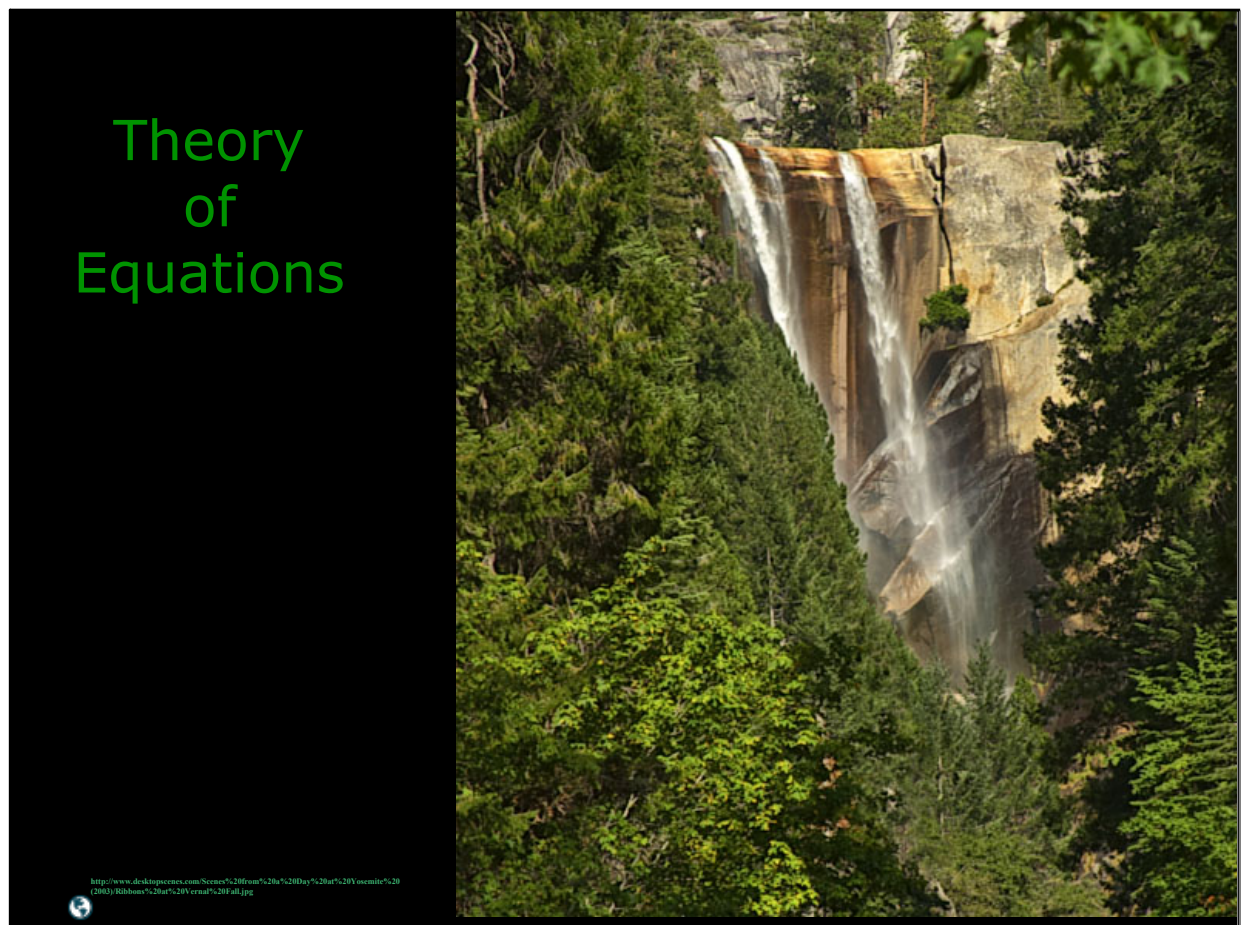


Turn in your GrHW #5 with work stapled to the back

But we're starting with the notes



Nov 4-1:05 PM

pg 328:

23. $(-\infty, -2) \cup [2, \infty)$

32. $[-2, -1] \cup [2, \infty)$

51. $(2, \frac{7}{2}]$

52. $(-\infty, 5) \cup (10, \infty)$

54. $(-\infty, 0) \cup [2]$

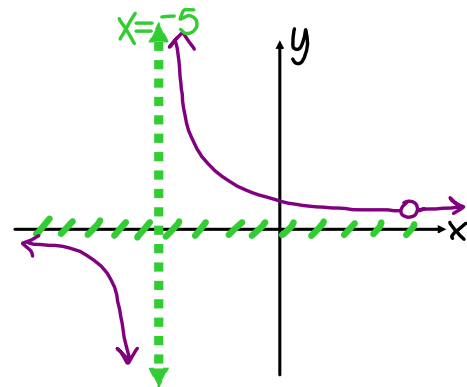
Ditto 3.1

7. hole: $(5, \frac{1}{10})$

x-int: none

y-int: $(0, \frac{1}{5})$ VA: $x = -5$ HA: $y = 0$

Cross? NO



Nov 6-8:50 AM

7. $\frac{x^2 - 4x + 4}{x + 3} > 0$

num $\neq 0$ *den $= 0$

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

$x + 3 = 0$

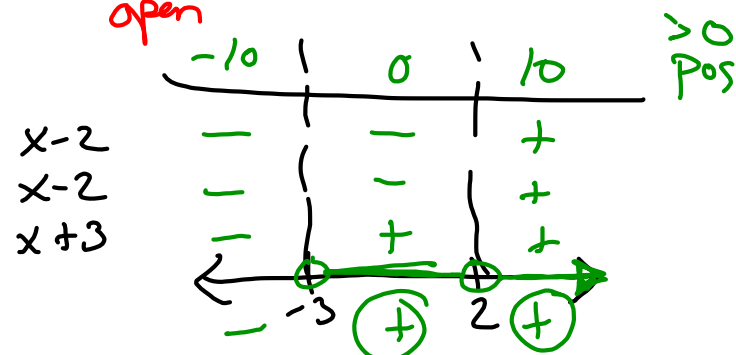
$(x - 2)(x - 2) = 0$

$x = -3$

$x = 2 \quad x = 2$

open

open



$$\{x \mid -3 < x < 2, x > 2\}$$

$$\text{or } (-3, 2) \cup (2, \infty)$$

Nov 1-10:10 AM

Warm-Up:

Find the y-intercept:

$(0, -8)$

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

$f(0) = 2(0+1)^2(0+2)^2(0-1)^3$

$f(0) = -8$

Oct 4-9:31 AM

Theory:

Degree of polynomial is the same as the number of complex roots.

All non-real complex roots must occur in pairs with their conjugate.

1. Write an equation of a polynomial whose roots include
- 2
- and
- $2+i$
- .

$$\text{roots} = 2, 2+i, 2-i$$

$$\downarrow$$

 $x-2$

$$\frac{2+i}{a=1}$$

$$b = -\text{sum} = -(2+i + 2-i) = -4 = \underline{b}$$

$$c = \text{prod} = (2+i)(2-i) = 4 - i^2 = 4 + 1 = \underline{5} = c$$

$$x^2 - 4x + 5 = 0$$

$$p(x) = (x-2)(x^2 - 4x + 5) = 0$$

$$p(x) = x^3 - 4x^2 + 5x - 2x^2 + 8x - 10$$

$$p(x) = x^3 - 6x^2 + 13x - 10$$

$$\text{But? } x^3 - 6x^2 + 13x - 10 = 0$$

Oct 4-9:31 AM

2. Create a function that has a hole at $(1, -1/2)$ and vertical asymptotes at $x = 2$ and $x = 3$ and $x = -3$.

$$P(x) = \underline{\hspace{2cm}}$$

$$\text{VA} \rightarrow \text{denom} = (x-2)(x-3)(x+3)$$

$$\text{Hole } (1, -1/2) \rightarrow \frac{x-1}{x-1}$$

$$f(1) = -1/2$$

$$P(x) = \frac{K(\quad)(\quad)}{(\quad)(\quad)(\quad)}$$

$$\frac{K}{(x-2)(x-3)(x+3)}$$

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

$$-\frac{1}{2} = \frac{K}{(-1)(-2)(4)}$$

$$-\frac{1}{2} \times \frac{K}{8}$$

$$-8 = 2K$$

$$K = -4$$

$$P(x) = \frac{-4(x-1)}{(x-1)(x-2)(x-3)(x+3)}$$

Oct 4-9:31 AM

3. Create a function that has a hole at $(2, -6)$ and vertical asymptotes at $x = 1$ and $x = -1$.

$$\text{VA} \rightarrow \text{denom} = (x-1)(x+1)$$

$$\text{Hole } (2, -6) \rightarrow \frac{x-2}{x-2}$$

Find K

$$P(2) = -6$$

$$-6 = \frac{K}{(x-1)(x+1)} \quad x=2$$

$$-6 = \frac{K}{(2-1)(2+1)}$$

$$-6 = \frac{K}{(1)(3)}$$

$$-6 = \frac{K}{3}$$

$$-18 = K$$

$$P(x) = \frac{-18(x-2)}{(x-2)(x-1)(x+1)}$$

$$18 | K = -\frac{1}{18}$$

$$P(x) = \frac{(x-2)}{-18(x-2)(x-1)(x+1)}$$

Oct 4-9:31 AM

4. Create a function that has x-intercepts at $(-1, 0)$ and $(3, 0)$, vertical asymptotes at $x = 1$ and $x = 0$ and a horizontal asymptote at $y = 3$.

VA $\rightarrow$ den = $x(x-1)$

x-ints $\rightarrow$ $\frac{0}{1} = \frac{n}{d}$

$(-1, 0)(3, 0)$

HA: $y = 3$ $\frac{(3)x^2}{x^2}$ $K = 3$

$$P(x) = \frac{3(x+1)(x-3)}{x(x-1)}$$

Oct 4-9:31 AM

Homework: pg 343 # 75; pg 345 #28

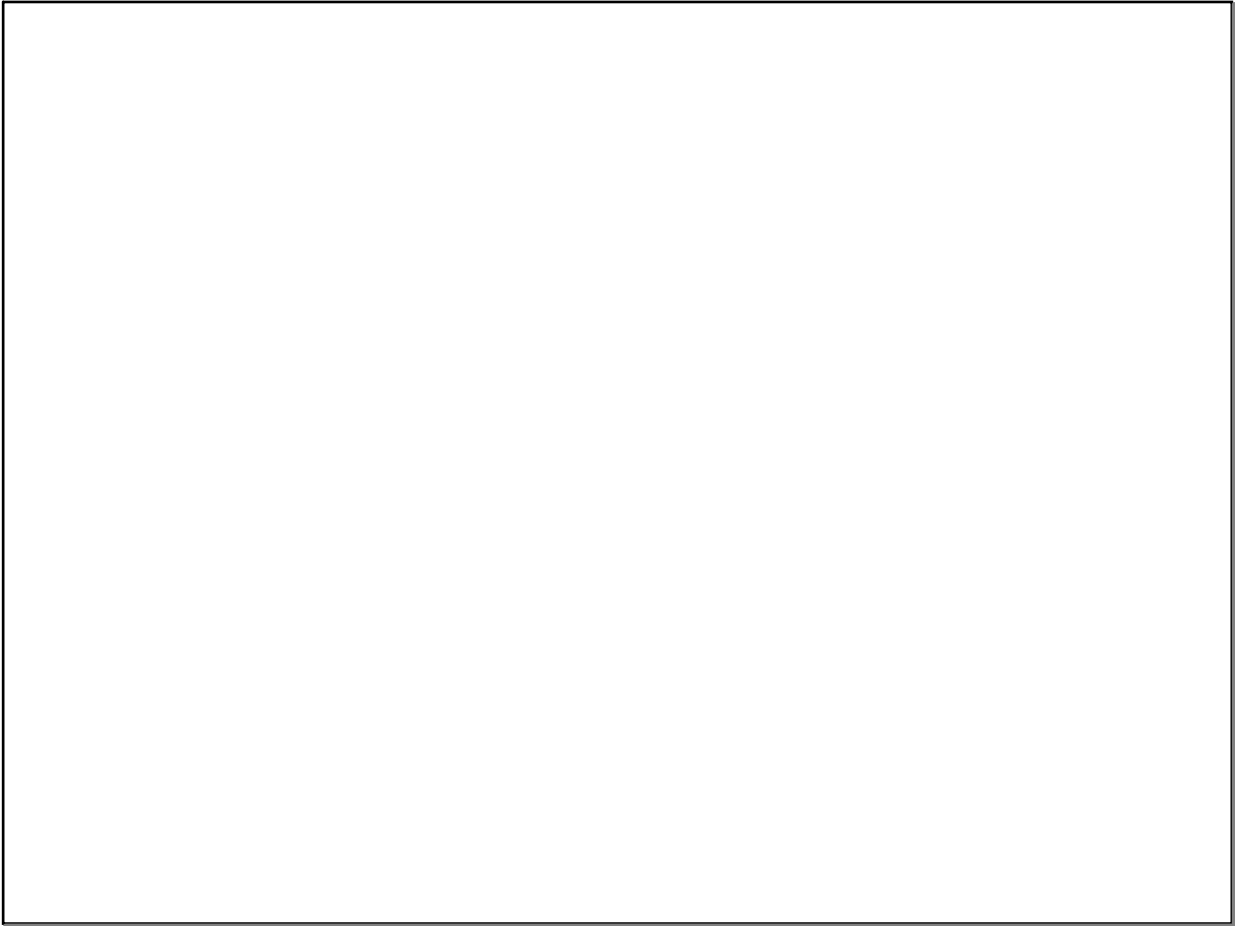
Write the Equation: **Test Tuesday!**

1) Hole at $(-4, 2)$, va: $x = 1, x = -1$

2) Hole at $(3, 1/4)$, va: $x = 1$

3) x-intercepts: $(0, 0), (2, 0)$, va: $x = -3, x = 1$
ha: $y = 2$

Nov 4-1:09 PM



Nov 5-9:01 AM