

Graphing : pg 19

I. Holes: /  
 common factors

Ex.  $\frac{4x-8}{x^2-4} = \frac{4(x-2)}{(x+2)(x-2)}$

$x-2=0$   
 $x=2$

$(2, 1)$

$\frac{4}{2+2} = \frac{4}{4}$

Oct 12-8:28 AM

II Asymptotes:  
 graph is undefined - "hug"

A. Vertical Asymptotes:  
 deno = 0  
 and solve

Ex.  $x+2=0$  VA  
 $x=-2$

B. Horizontal Asymptote  
 $y = \frac{ax^m}{bx^n}$  look at degrees

1.  $n > m$  "JLo"  $\rightarrow y=0$

2.  $m > n$  "Dolly"  $\rightarrow$  no HA

3.  $n = m$  "Marilyn"  $\rightarrow$  slant  
 $y = mx + b$

$y = \frac{a}{b}$

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Ex.

①  $y = \frac{2x^2}{9x^2-1} = \frac{2x}{(3x+1)(3x-1)}$

No holes

VA:  $3x+1=0$   $3x-1=0$   
 $3x=-1$   $3x=1$   
 $x=-\frac{1}{3}$   $x=\frac{1}{3}$

HA:  $y=0$

x int:  $(0, 0)$

y int:  $(0, 0)$

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

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

\* Holes  $x=0$   $(0, 0)$

VA:  $x-1=0$   
 $x=1$

HA:  $y=1$

x int:  $(0, 0)$

y int:  $(0, 0)$   $\frac{0}{0} = 1$

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

No holes

VA:  $x-3=0$   
 $x=3$

HA: Slant

x int:  $(0, 0)$

y int:  $(0, -\frac{5}{3})$

$y = x + 0$

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