

PreCalculus-Aug 24

- Calculator Check
- Starter #2
- Questions on Factor Review Worksheet
- 1.2 Part 2 Pg. 86 Domain/Range
- Definition of a Function


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(13)  $2p^4 - 5p^3$        $x^2 - x$   
 $p^3(2p - 5)$        $x(x - 1)$

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How do you determine if an expression is a function? Draw a vertical line, the vert can only cross the graph once.  
 X-value cannot have two y-values  
 Is this a function? Why or why not?



NO - Doesn't pass the vertical line test  
 x repeats  
 1 x is paired w 2 y's  
 girls can't cheat and function

x: girls  
 y: boys

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x-girls  
 y-boys

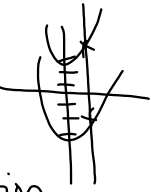
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$y^2 = x - 3$   
 NO  
 $y = \sqrt{x - 3}$   
 $y = -\sqrt{x - 3}$

$f(x) = x^2 \pm 3$   
 $y = x^2 - 3$   
 $y = x^2 + 3$

Not a function

$y^2$  is never a function



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Domain: possible x-values  
 X left, right  
 Range: possible y-values  
 Y bottom, top

parenthesis  
 open circle  
 not equal to

bracket  
 closed circle  
 equal to

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Red Flags Domain  $(-\infty, \infty) \text{ or } \mathbb{R}$

1. Fraction with x in the denominator  
 Set the bottom equal to zero, factor to solve for the excluded value
2. Square root. Set the inside <sup>greater than or</sup> equal to zero.  
 This is the breaking point, draw a #line
3. Log or Exponential

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$\frac{1}{x}$

1. Fraction
2. Set bottom equal to 0 to find the excluded value(s)
3. Draw a # line and X out the excluded value
4. Interval notation

$X \neq 0$  the domain cannot touch zero

$-\infty$  ~~to~~  $\infty$

$D: (-\infty, 0) \cup (0, \infty)$

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$\frac{x}{x-1}$  D:

1. Fraction
2.  $x-1=0$   
 $x \neq 1$
3.  ~~$-\infty$  to  $\infty$~~
4.  $D: (-\infty, 1) \cup (1, \infty)$

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⑬  $g(x) = \frac{x}{x^2-5x}$

$x^2-5x=0$  Factor

$x(x-5)=0$

$x \neq 0$   $x-5=0$   
 $x \neq 5$

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1. sq:  $\sqrt{x+1}$

2.  $x+1 \geq 0$   
 $-1 \quad -1$   
 $x \geq -1$

3.

4.  $D: [-1, \infty)$

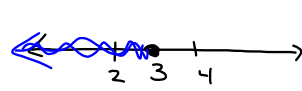
Square roots positive

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$f(x) = \sqrt{3-x}$  Hagen calls this Breaking Point

Domain: ~~Range:~~

- sq. root
- $3-x \geq 0$   
 $+x \quad +x$   
 $3 \geq x$
- $3-x \geq 0$   
 $-x \geq -3$   
 $x \leq 3$
- $3-x \geq 0$   
 $-x \geq -3$   
 $x \leq 3$



4. D:  $(-\infty, 3]$

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$f(x) = \frac{1}{x+5}$

Domain:

- .
- .
- .

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19.  $f(x) = \frac{x^2}{1-x^2}$

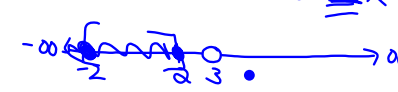
Range:

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14.  $f(x) = \frac{\sqrt{4-x^2}}{x-3}$   $\sqrt{x^2}$  Combination

$4-x^2 \geq 0$   
 $+x^2 \quad +x^2$   
 $4 \geq x^2$   
 $2 \geq x$   
 $-2 \leq x$

$x-3=0$   
 $+3 \quad +3$   
 $x=3$



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 #1-20


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⑭ - A different way We know 3 is excluded

$4-x^2 \geq 0$

$(2-x)(2+x) \geq 0$

$2-x \geq 0 \quad 2+x \geq 0$   
 $+x \quad +x \quad -2 \quad -2$   
 $2 \geq x \quad x \geq -2$   
 $x \leq 2$   
 x is less than or equal to 2 and x is greater than or equal to -2



D:  $[-2, 2]$

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