

Thursday, August 25, 2016



- 1.2 Domain Practice
- 1.2 Range, Increasing, & Decreasing Notes
- HW: use etext on calendar or MML version

## 1.2 - Domain

Domain of functions is all real numbers  $(-\infty, \infty)$  except:

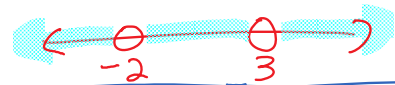
- ① Denominator  $\neq 0$
- ② Radicand  $\geq 0$
- ③ Radicand in denominator  $> 0$

Examples - Find domain.

①  $f(x) = \frac{x+1}{(x+2)(x-3)}$

$x+2 \neq 0 \rightarrow x \neq -2$

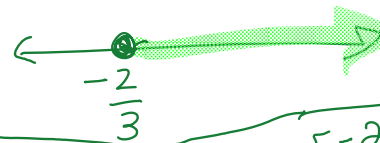
$x-3 \neq 0 \rightarrow x \neq 3$



Domain:  $(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$

②  $f(x) = \sqrt{3x+2}$

$$\begin{aligned} 3x+2 &\geq 0 \\ 3x &\geq -2 \\ x &\geq -\frac{2}{3} \end{aligned}$$



Domain:  $[-\frac{2}{3}, \infty)$

③  $f(x) = \frac{1}{\underline{\quad}}$

$$\textcircled{3} f(x) = \frac{1}{\sqrt{2-x}}$$

$$\begin{aligned} 2-x &> 0 \\ +x &+x \\ 2 &> x \end{aligned}$$

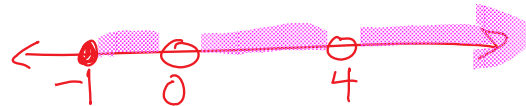


$$\text{Dom: } (-\infty, 2)$$

$$\textcircled{4} f(x) = \frac{\sqrt{x+1}}{x(x-4)}$$

$$\begin{aligned} \uparrow & \quad \uparrow \\ x & \neq 0, 4 \end{aligned}$$

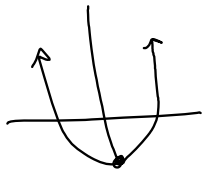
$$\begin{aligned} x+1 &\geq 0 \\ x &\geq -1 \end{aligned}$$



$$\text{Dom: } [-1, 0) \cup (0, 4) \cup (4, \infty)$$

Range : y-values of a function  
determine graphically

$$\textcircled{1} f(x) = x^2 - 4 \quad \text{range } [-4, \infty)$$



$$\textcircled{2} f(x) = \sqrt{x+4} \quad \text{range } [0, \infty)$$

Increasing Intervals : where y-values of function are becoming greater

\* answer x-interval

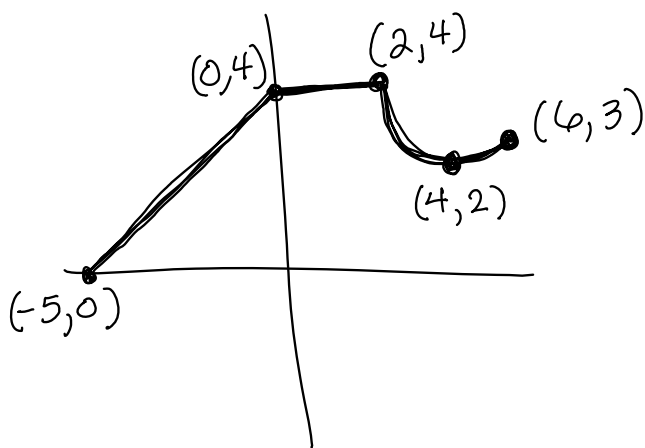
Decreasing Intervals : where y-values are getting smaller

Decreasing Intervals : where y-values are getting smaller

\* answer x - interval

Constant Intervals : where y-values don't change

\* answer x - interval



Increasing Intervals  
 $[-5, 0] \cup [4, 4]$

Decreasing Intervals  
 $[2, 4]$

Constant Intervals  
 $[0, 2]$