

WELCOME TO CALCULUS!

FUNCTIONS -



$$f(x) = \begin{cases} x^2 + 1 & \text{if } x < 2 \\ \frac{2}{x} & \text{if } x \geq 2 \end{cases}$$

$$f(-3) = (-3)^2 + 1 = 10$$

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

Domain: $x \neq -4, 1$

$$f(x) = \sqrt{x^2 - 4} \quad (x-2)(x+2)$$

$$\text{min} \quad - \quad \text{max}$$

$$(-\infty, -2] \cup [2, \infty)$$

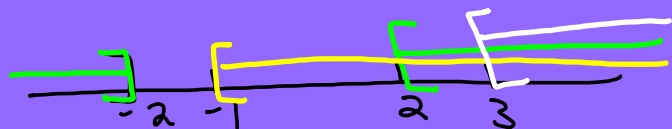
Domain = set of x-coord
Range = set of y-coord

Type of Func	Consider
Rational	Denom $\neq 0$
Polynomial	\mathbb{R}
Odd Root $y = \sqrt[n]{x} - 5$	\mathbb{R}
Even Root	Must contain + value <u>Test pts!</u>

Holes $f(x) = \frac{x^2 - 5x - 6}{x+1} = \frac{(x-6)\cancel{(x+1)}}{\cancel{x+1}}$ Hole at $x = -1$

$f(x) = \sqrt{x^2 - 4}$ $g(x) = \sqrt{x+1}$
 $(f \circ g)(x) = \sqrt{(\sqrt{x+1})^2 - 4} = \sqrt{x-3}$

Final solution: $[3, \infty)$



13, 18 = Graph on calculator

Domain: x 's L to R

Range: y 's Low to High

$$\underbrace{[-2, 2] \times [-10, 15]}_{\text{Window}}$$

14, 15, 16 = Find domain by hand - \int ignore the given viewing window

55 $f[g(4)]$



ignore the given viewing window