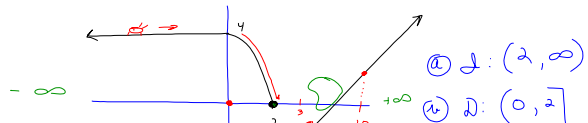
October 9, 2015



ⓐ $I: (2, \infty)$

ⓑ $D: (0, 2]$

ⓒ $C: (-\infty, 0]$

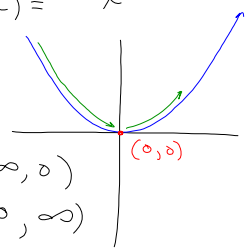
$$f(x) = \begin{cases} 4, & x \le 0 \\ 4 - x^2, & 0 < x \le 2 \\ 2x - 6, & x > 2 \end{cases}$$

Domain: $(-\infty, \infty)$

Rang: $(-2, \infty)$

Oct 9-11:02 AM

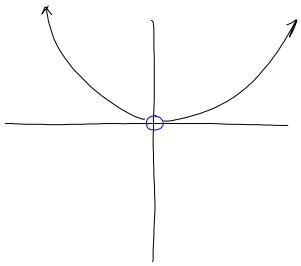
$f(x) = x^2$



$D: (-\infty, 0)$

$I: (0, \infty)$

Oct 9-11:15 AM



Oct 9-11:17 AM

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

Domain → f $(-\infty, \infty)$ $\{x \mid x \in \mathbb{R}\}$

" → g $[-4, \infty)$

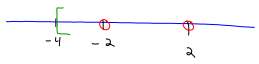
$\{x \mid x \in \mathbb{R}$ & $x \ge -4\}$

$$\left(\frac{g}{f}\right)(x) = \frac{4 + \sqrt{x+4}}{x^2 - 4}$$

$$= \frac{4 + \sqrt{x+4} \ge 0}{(x+2)(x-2) = 0}$$

① $x \ge -4$

② $x \ne \pm 2$



Domain:

$[-4, -2) \cup (-2, 2) \cup (2, \infty)$

Oct 9-11:18 AM

Composition of Functions

$$(f \circ g) = f(g(x))$$

$$(g \circ f) = g(f(x))$$

Oct 9-11:27 AM

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

$$(f \circ g)(x) = f(g(x))$$

$$= \left(\sqrt{x+4}\right)^2 - 4$$

$$= \left(\sqrt{x+4}\right)\left(\sqrt{x+4}\right) - 4$$

$$= x + 4 - 4$$

$$= x$$

$\left(\sqrt{2}\right)^2$

$= \sqrt{2} \cdot \sqrt{2}$

$= \sqrt{2 \cdot 2}$

$= \sqrt{4}$

$= 2$

Oct 9-11:29 AM

$(g \circ f)(x) = \sqrt{(f(x)) + 4}$

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

$= \sqrt{x^2 - 4 + 4}$

$= \sqrt{x^2}$

$= x$

Oct 9-11:35 AM

$f(x) = 3x - 5$

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

$(f \circ g)(x) = 3(g(x)) - 5$

$= \frac{3}{1}\left(\frac{1}{x+5}\right) - \frac{5}{1}$

$= \frac{3}{x+5} - \frac{5}{1}$ LCD: $x+5$

$= \frac{3 - 5(x+5)}{x+5}$

$= \frac{3 - 5x - 25}{x+5}$

$= -\frac{22 - 5x}{x+5}$

$= -\frac{(22+5x)}{x+5}$

Oct 9-11:43 AM

Oct 9-11:42 AM