$f: A \to B$

$f: B \to A$

Dominio normal

funcion inversa

Dominio función Inversa

1) Determinar Función, Dom y Funcion inversa, luego Dom de función inversa.

a) $f(x) = \frac{x}{5} \longrightarrow Dom(f) = \mathbb{R}$

$\longrightarrow f^{-1}(x) = y \Longleftrightarrow x = f(y)$

$\Longleftrightarrow x = \frac{y}{5}$

$\Longleftrightarrow 5x = y$

$\left.\right\} f^{-1}(x) = 5x$

$\longrightarrow Dom(f)^{-1} = \mathbb{R}$

b) $f(x) = \frac{2x+3}{3x+5} \longrightarrow Dom(f) = \mathbb{R} - \{-5/3\}$

$\longrightarrow f^{-1}(x) = y \Longleftrightarrow x = f(y)$

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

$\Longleftrightarrow x(3y+5) = 2y+3$

$\Longleftrightarrow 3xy + 5x = 2y + 3$

$\Longleftrightarrow 3xy - 2y = -5x + 3$

$y(3x-2) = -5x+3$

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

$\to f^{-1}(x) = \frac{5x-3}{2-3x}$

$2 - 3x \neq 0$

$2 \neq 3x$

$\frac{2}{3} \neq x$

$\longrightarrow Dom(f)^{-1} = \mathbb{R} - \{2/3\}$

c) $f(x) = 1 - \frac{1}{2x} \longrightarrow \frac{2x-1}{2x} \longrightarrow Dom(f) = \mathbb{R} - \{0\}$

$\longrightarrow f^{-1}(x) = y \Longleftrightarrow x = f(y)$

$\Longleftrightarrow x = 1 - \frac{1}{2y}$

$\Longleftrightarrow 2xy = 2y - 1$

$2xy - 2y = -1$

$y(2x-2) = -1$

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

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

$2x - 2 \neq 0$

$2x \neq 2$

$x \neq 2/2$

$x \neq 1$

$\longrightarrow Dom(f)^{-1} = \mathbb{R} - \{1\}$

a) $Dom(f) = \mathbb{R}$

$f^{-1}(x) = 5x$

$Dom(f)^{-1} = \mathbb{R}$

b) $Dom(f) = \mathbb{R} - \{-5/3\}$

$f^{-1}(x) = \frac{5x-3}{2-3x}$

$Dom(f)^{-1} = \mathbb{R} - \{2/3\}$

c) $Dom(f) = \mathbb{R} - \{0\}$

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

$Dom(f)^{-1} = \mathbb{R} - \{1\}$

Sean $f: A \subseteq \mathbb{R} \to \mathbb{R}$ y $g: B \subseteq \mathbb{R} \to \mathbb{R}$

$g \circ f: X \longrightarrow \mathbb{R}$

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

$X = \{ x \in \mathbb{R} / x \in Dom(f) \wedge f(x) \in Dom(g) \}$

2) Funciones Compuestas; Resolver → determinar $(f \circ g)(x)$

$f(x) = 2x + 3 \longrightarrow Dom(f) = \mathbb{R}$ $\qquad \underbrace{2(1 - x^2) + 3}$

$g(x) = -x^2 + 1 \longrightarrow Dom(g) = \mathbb{R}$ $\qquad 2 - 2x^2 + 3$

$-2x^2 + 5 \quad \mathbb{R}$

a) $Dom(g \circ f) = \{ x \in \mathbb{R} / x \in Dom(f) \wedge f(x) \in Dom(g) \}$

$= \{ x \in \mathbb{R} / x \in \mathbb{R} \wedge f(x) \in \mathbb{R} \}$

$= \mathbb{R} \longrightarrow f(g(x)) = 2(1 - x^2) + 3 \Longleftrightarrow -2x^2 + 5$

b) Dados $f(2) = 3$ $\qquad f(g(x)) =$

3) Sean f y g funciones Reales: determinar a) $(f - g)(x)$ b) $\frac{f}{g}(x)$

$f(x) = x^2 - 3$

$g(x) = \frac{x - 4}{x - 5}$

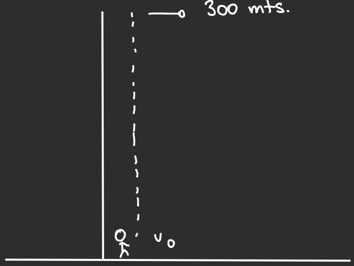
a) $(f - g)(x) \longrightarrow x^2 - 3 = \frac{x^2 - 3}{1} - \frac{x - 4}{x - 5} = x^2 - 3(x - 5) - x - 4$

$x^2(x - 5) - 3(x - 5) - x - 4$

$\frac{x^3 - 5x^2 - 4x + 19}{x - 5}$

b) $\frac{f}{g}(x) \longrightarrow \frac{x^2 - 3}{1} \cdot \frac{x - 5}{x - 4} = \frac{x^3 - 4x^2 - 3x + 15}{x - 4} =$

4)



$y = 300.$

Distancia inicial: $(S(t) = -16t^2 + v_0 t)$

Determinar v_0

$S(0) = 0$

$S = 0$

$S(300) = -16(300)^2 + v_0(300)$

$16 \cdot 9000$

$16 \cdot 9$

$144\,000 + 300$

$144.300 = V$

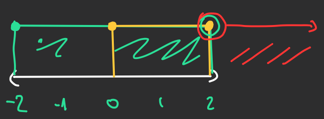
5) $6 \cdot 4 = 24$ en area.

6) Dada la función:

$$h(t) = \begin{cases} 3+4t & \text{si } -2 \le t < 2 \longrightarrow [-2, 2[\\ t^2+1 & \text{si } 0 \le t \le 2 \longrightarrow [0, 2] \\ \sqrt{7} & \text{si } t > 2 \longrightarrow]2, +\infty[\end{cases}$$

$h(1/2)$
$h(0)$
$h(-1)$
$h(5/2)$

a) $\text{Dom}(c) = [-2, 2[\cup [0, 2[\cup]2, +\infty[$



$= [-2, +\infty[$

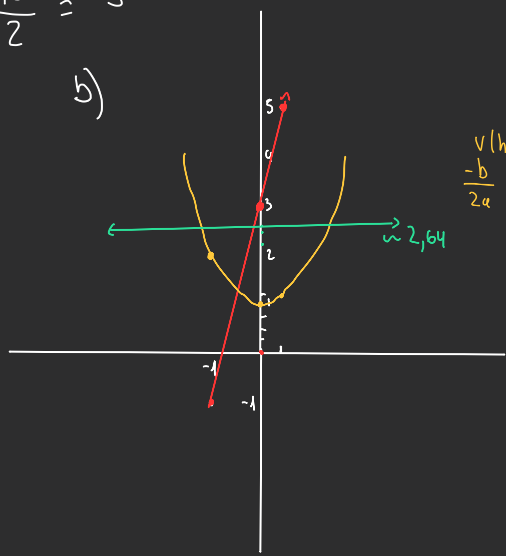
$x = 1/2, y = 5$

$3 + 4t$

$$\frac{3}{1} + \frac{4}{1} \cdot \frac{1}{2} = \frac{3}{1} + \frac{4}{2} = \frac{10}{2} = 5$$

$$\frac{1}{2}^2 = \frac{1}{4} + \frac{1}{1} = \frac{5}{4}$$

b)



$V(h, k)$
$\frac{-b}{2a} = \frac{-1}{2} = \frac{-1}{2}$

7) $f : \text{Dom}(f) \subseteq \mathbb{R} \to \mathbb{R}$
$x \to f(x) = \frac{1}{x+2}$

$g : \text{Dom}(g) \subseteq \mathbb{R} \to \mathbb{R}$
$x \to g(x) = \frac{x}{x-1}$

a) $f + g = \frac{1}{x+2} + \frac{x}{x-1}$

b) $f \cdot g = \frac{1}{x+2} \cdot \frac{x}{x-1}$

c) $f/g = \frac{1}{x+2} \cdot \frac{x-1}{x}$

Inversa

8) $f(x) = \sqrt{3-x}$

$x = \sqrt{3-y} \quad /()^2$
$x^2 = 3 - y$
$y = 3 - x^2$

$f^{-1}(x) = 3 - x^2$
$\text{Dom} = \mathbb{R}.$