

What you'll Learn About

$$f(x) = \frac{(-\infty, \infty)}{4x+1} \quad \text{and} \quad g(x) = \frac{(-\infty, \infty)}{(x+3)^2}$$

Find the formulas for the following and the domain of each

a) $f+g$ b) $f-g$ c) fg

$$\begin{aligned} c) \quad fg &= (4x+1)(x+3)^2 \\ &= (4x+1)(x^2+6x+9) \\ &= \frac{4x^3+24x^2+36x}{x^2+6x+9} \\ &= 4x^3+25x^2+42x+9 \\ D: (-\infty, \infty) \end{aligned}$$

$$\begin{aligned} a) \quad f+g &= 4x+1 + (x+3)^2 \\ &= 4x+1 + x^2+6x+9 \\ &= x^2+10x+10 \\ D: (-\infty, \infty) \end{aligned}$$

$$\begin{aligned} & (x+3)(x+3) \\ b) \quad f-g &= 4x+1 - (x+3)^2 \\ &= 4x+1 - (x^2+6x+9) \\ &= 4x+1 - x^2 - 6x - 9 \\ &= -x^2 - 2x - 8 \\ D: (-\infty, \infty) \end{aligned}$$

$$f(x) = \frac{[6, \infty)}{\sqrt{x-6}} \quad \text{and} \quad g(x) = \frac{(-\infty, \infty)}{\cos x}$$

Find the formulas for the following and the domain of each

a) $f+g$ b) $f-g$ c) fg

$$\begin{aligned} a) \quad f+g &= \sqrt{x-6} + \cos x & b) \quad f-g &= \sqrt{x-6} - \cos x \\ D: [6, \infty) & & D: [6, \infty) & \end{aligned}$$

$$\begin{aligned} c) \quad fg &= \cos x \sqrt{x-6} \\ D: [6, \infty) \end{aligned}$$

$$[2, \infty) \quad (-\infty, \infty)$$

$$f(x) = \sqrt{x-2} \text{ and } g(x) = x^3$$

Find the formulas for the following and the domain of each

a) f/g b) g/f

$$a) \frac{\sqrt{x-2}}{x^3}$$

$$D: [2, \infty)$$

$$b) \frac{x^3}{\sqrt{x-2}}$$

$$D: (2, \infty)$$

$$8 - x^3 \geq 0$$

$$8 \geq x^3$$

$$2 \geq x$$

$$x \leq 2$$

$$(-\infty, 2] \quad (-\infty, \infty)$$

$$f(x) = \sqrt{8-x^3} \text{ and } g(x) = x^2$$

Find the formulas for the following and the domain of each

a) f/g b) g/f

$$a) \frac{\sqrt{8-x^3}}{x^2}$$

$$D: (-\infty, 0) \cup (0, 2]$$

$$b) \frac{x^2}{\sqrt{8-x^3}}$$

$$D: (-\infty, 2]$$