

1. $f(x) = 2x - 3$ & $g(x) = x^2 - 1$. Find $(f + g)(x)$, and Find the Domain.

In this problem, simply add the two functions.

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

The Domain of $f(x)$ is All Real Numbers.

The Domain of $g(x)$ is All Real Numbers.

Since each Domain is the Same, $\boxed{\text{the Domain is All Real Numbers}}$.

2. $f(x) = 2x - 3$ & $g(x) = x^2 - 1$. Find $(f - g)(x)$.

In this problem, simply subtract the two functions.

$$(f - g)(x) = f(x) - g(x) = (2x - 3) - (x^2 - 1) = \boxed{-x^2 + 2x + 2}.$$

3. $f(x) = 2x - 3$ & $g(x) = x^2 - 1$. Find $(fg)(x)$.

In this problem, simply multiply the two functions.

$$(fg)(x) = (2x - 3)(x^2 - 1) = \boxed{2x^3 - 3x^2 - 2x + 3}.$$

4. $f(x) = 2x - 3$ & $g(x) = x^2 - 1$. Find $\left(\frac{f}{g}\right)(x)$.

In this problem, simply divide the two functions.

$$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} = \boxed{\frac{2x - 3}{x^2 - 1}, x \neq \pm 1}.$$

5. $f(x) = x^2$ & $g(x) = \sqrt{x}$. Find $(fg)(x)$, and Find the Domain.

In this problem, multiply the two functions.

$$(fg)(x) = x^2 \sqrt{x} = x^2(x^{1/2}) = \boxed{x^{5/2}}.$$

The Domain of $f(x)$ is All Real Numbers.

The Domain of \sqrt{x} is $x \geq 0$.

Therefore the Domain of $(fg)(x)$ is the common values of each domain. $\boxed{x \geq 0}$.

6. $f(x) = \sqrt{x}$ & $g(x) = \sqrt{9 - x^2}$. Use a calculator to find $\left(\frac{f}{g}\right)(2)$ to 3 decimal places.

Put $f(x)$ in Y1, $g(x)$ in Y2, and $Y1(x) - Y2(x)$ in Y3.

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Plot1 Plot2 Plot3
Y1=√(X)
Y2=√(9-X^2)
Y3=Y1(X)/Y2(X)
Y4=
Y5=
Y6=
Y7=

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On the home screen enter $Y3(2)$, and find your answer.

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Y3(2)
.632455532

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The Answer: $\boxed{\left(\frac{f}{g}\right)(2) = 0.632}$.

Calculator Active

1. $f(x) = -5\sqrt[4]{x}$, $g(x) = 19\sqrt[4]{x}$

a. Find $(f + g)(x)$ _____

b. Find the Domain of $(f + g)(x)$ _____

c. Find $(f + g)(16)$ _____

d. Find $(f - g)(x)$ _____

e. Find $(f - g)(16)$ _____

2. $f(x) = 6x - 4x^2 - 7x^3$, $g(x) = 9x^2 - 5x$

a. Find $(f + g)(x)$ _____

b. Find the Domain of $(f + g)(x)$ _____

c. Find $(f + g)(16)$ _____

d. Find $(f - g)(x)$ _____

e. Find $(f - g)(16)$ _____

3. $f(x) = x^4$, $g(x) = 3\sqrt{x}$

a. Find $(fg)(x)$ _____

b. Find the Domain of $(fg)(x)$ _____

c. Find $(fg)(4)$ _____

d. Find $\left(\frac{f}{g}\right)(x)$ _____

e. Find the Domain of $\left(\frac{f}{g}\right)(x)$ _____

f. Find $\left(\frac{f}{g}\right)(4)$ _____