

COLLEGE ALGEBRA QUIZ

- (1) Given $f(x) = \sqrt{x-4}$ and $g(x) = x^2 - 1$, evaluate $(f - g)(8)$ and $(fg)(4)$.

Solution: $(f - g)(8) = -61$

$(fg)(4) = 0$

- (2) Given $f(x) = \frac{5}{x^2}$ and $g(x) = 7 - 2x$, state the domains of $f, g, f + g, f - g, fg$, and $\frac{f}{g}$.

Solution:

Domain of f is $(-\infty, 0) \cup (0, \infty)$

Domain of g is $(-\infty, \infty)$

Domain of $f + g, f - g$, and fg is $(-\infty, 0) \cup (0, \infty)$

Domain of $\frac{f}{g}$ is $(-\infty, 0) \cup (0, \frac{7}{2}) \cup (\frac{7}{2}, \infty)$

- (3) Given $f(x) = 2x^2 + 3x$ and $g(x) = 3x - 1$, find $(f + g)(x), (f - g)(x), (fg)(x)$, and $(\frac{f}{g})(x)$.

Solution:

$(f + g)(x) = 2x^2 + 6x - 1$

$(f - g)(x) = 2x^2 + 1$

$(fg)(x) = 6x^3 + 7x^2 - 3x$

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

- (4) The total revenue of a shoe store is given by the function, $R(x) = 210x - 0.5x^2$ and the total cost of doing business is given by the function, $C(x) = 16x + 5$, find $P(x)$, the total profit function.

Solution:

$P(x) = -.5x^2 + 194x - 5$

- (5) For, $f(x) = \frac{3}{x}$, find and simplify the difference quotient.

Solution:

$\frac{-3}{x(x+h)}$