



SECTION 5.3: POWER AND RADICAL FUNCTIONS

- Domain - denominator can not be zero
- Rationalizing
- Difference Quotient

Pr 1. Compute each of the following:.

(a) $\left(\frac{(x+2)^2}{x^2-16}\right)\left(\frac{7(x+4)}{(x-4)}\right)$

(b) $\left(\frac{4x^3-12x^2+9x}{x^2-49}\right)\left(\frac{10x^2-15x}{x^2+4x-21}\right)$

(c) $\frac{2}{(x-2)(x+4)} - \frac{x+5}{(x-2)(x+2)}$

Pr 2. State the domain of each rational function. Then classify each domain restriction as the location of a hole or vertical asymptote on the graph of the function.

(a) $f(x) = \frac{(3x - 2)(2x - 5)}{(x - 5)(2x + 5)}$

(b) $g(x) = \frac{(x + 3)(x - 2)}{(x - 2)(x + 2)}$

(c) $h(x) = \frac{-2x}{6x^2 - 8x}$

(d) $j(x) = \frac{3x^2 - 6x + 3}{x^2 - 9}$

Pr 3. Determine the x - and y -intercepts, if possible, for each function.

(a) $f(x) = \frac{(3x - 2)(2x - 5)}{(x - 5)(2x + 5)}$

(b) $g(x) = \frac{(x + 3)(x - 2)}{(x - 2)(x + 2)}$

(c) $h(x) = \frac{-2x}{6x^2 - 8x}$

(d) $j(x) = \frac{3x^2 - 6x + 3}{x^2 - 9}$

Pr 4. Compute and simplify the difference quotient for each function.

(a) $f(x) = -x^2 + 5x - 4$

(b) $g(x) = \frac{3x}{2x - 2}$

SECTION 5.4: POWER AND RADICAL FUNCTIONS

- Power Functions
- Radical Functions
- Domain of Radical Functions based on Index
- Conjugate
- Rationalizing a numerator or denominator

Pr 1. Rewrite each radical in its equivalent exponent (power) form, assuming x is in the domain of each function.

(a) $\sqrt[5]{-2x^2 + 4x}$

(b) $6\sqrt{3x^2 - 8x + 2}$

(c) $\sqrt[4]{(2 - 5x)^3}$

Pr 2. Rewrite each exponent function in its equivalent radical form, assuming x is in the domain of each function.

(a) $(x^2 + 3x)^{7/11}$

(b) $(3x + 8)^{9/13}$

(c) $2(5x - 3)^{7/3}$

Pr 3. State the domain of each function. Write your answer using interval notation. Then determine the x - and y -intercepts, if possible.

(a) $f(x) = \sqrt[6]{3x - 28}$

(b) $g(x) = 2\sqrt[5]{x - 5}$

(c) $h(x) = 5(2x - 5)^{5/12}$

Pr 4. State the domain of each function. Write your answer using interval notation.

(a) $f(x) = (3x - 4)^{-4/3}$

(b) $g(x) = \frac{\sqrt{x+2}}{5\sqrt[3]{x+2}}$

(c) $h(a) = \frac{3a}{\sqrt{a+2} - 5}$

Pr 5. Rationalize each numerator or denominator, as appropriate, and simplify the expression.

(a) $\frac{3x}{\sqrt{x}-3}$

(b) $\sqrt{3x-2}+5$

(c) $\frac{\sqrt{x+h}-\sqrt{x}}{h}$

Pr 6. Compute and simplify the difference quotient for $F(x) = 3\sqrt{2-x}$.