

Review Topic #5: Radical and Rational Functions

Date _____

Simplify each expression.

1)
$$\frac{\frac{m^2}{8}}{\frac{1}{m}}$$

2)
$$\frac{\frac{x^2}{5}}{\frac{x}{3} - \frac{x}{5}}$$

3)
$$\frac{\frac{x-1}{x} + \frac{x-2}{x^2}}{\frac{x}{x-2}}$$

Simplify each and state the excluded values.

4)
$$\frac{2}{10x} \cdot \frac{2x^4}{8}$$

5)
$$\frac{15x^3 + 10x^2}{x+9} \cdot \frac{9x}{27x^2 + 18x}$$

Identify the domain and range of each.

6)
$$y = \sqrt{x-3} - 5$$

7)
$$y = \sqrt{x} - 4$$

Solve each equation. Remember to check for extraneous solutions.

8)
$$10\sqrt{9n-2} = 50$$

9)
$$\frac{1}{2p+8} = \frac{1}{2p^2+8p} + \frac{p+5}{p^2+4p}$$

10)
$$1 - \frac{n-6}{n^2-2n-3} = \frac{n-2}{n+1}$$

Simplify.

11)
$$\frac{3\sqrt{15}}{\sqrt{12}}$$

12)
$$\frac{4}{-4 + \sqrt{3}}$$

Answers to Review Topic #5: Radical and Rational Functions (ID: 1)

1) $\frac{m^3}{8}$

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

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

4) $\frac{x^3}{20}; \{0\}$

5) $\frac{5x^2}{x+9}; \left\{-9, 0, -\frac{2}{3}\right\}$

6) Domain: $x \geq 3$
Range: $y \geq -5$

7) Domain: $x \geq 0$
Range: $y \geq -4$

8) $\{3\}$

9) $\{-11\}$

10) $\left\{\frac{3}{2}\right\}$

11) $\frac{3\sqrt{5}}{2}$

12) $\frac{-16 - 4\sqrt{3}}{13}$