Algebra 2 Trig	PRACTICE A.4.1-A.4.4	Mrs. Dunphy

Name Answers

1. State the **domain** of the expression.

$$\frac{1}{\sqrt{x-2}}$$

$x-2>0$

$x>2$

All Real numbers such that $x>2$

2. Simplify the expression and state its **domain**.

$$\frac{x^2-x-12}{x^2-8x+16}$$

$$\frac{(x+3)(x-4)}{(x-4)(x-4)}$$

$$\frac{x+3}{x-4}$$

All real #s such that $x \neq 4$

3. State the **domain** of the expression.

$$\frac{(x+3)}{(x-5)(x+1)}$$

All real numbers such that $x \neq 5, -1$

4. Simplify the expression and state its **domain**.

$$\frac{4t^3-16t}{12t^3-4t^2}$$

$$\frac{(t+2)(t-2)}{t(3t-1)}$$

All real numbers such that $x \neq 0, \frac{1}{3}$

Simplify each rational expression and state all ***restrictions***. Show all steps leading to your solution.

5. $$\frac{x^2-x}{x^2-4x+4} \cdot \frac{x^2-2x+1}{x-2} \cdot \frac{x^2}{x^2-1}$$

$$\frac{x^3(x-1)^2}{(x-2)^3(x+1)}, \quad x \neq 1$$

you don't have to state $x \neq 2, -1$

6. $$\frac{4x^2-1}{x^2-4} \div \frac{2x-1}{x-2} \div \frac{x^2}{x^2+4x+4}$$

$$\frac{(2x+1)(x+2)}{x^2}, \quad x \neq \pm 2, \frac{1}{2}$$

you don't have to state $x \neq 0$

7. $\frac{1}{x^2} - \frac{2}{xy} + \frac{1}{y^2}$

$\frac{(y-x)^2}{x^2y^2}$, $x \neq 0, y \neq 0$

8. $\frac{1}{x^2-2x+1} - \frac{1}{x^2-1}$

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

9. $\left(y^2-y-2\right)^{-1} - \left(y^2+y\right)^{-1}$

$\frac{2}{y(y+1)(y-2)}$

10. $\frac{a+b}{a-b} + \frac{a-b}{a+b} - \frac{b-a}{a-b} + \frac{b-a}{a+b}$

$\frac{2a}{a-b}$

Simplify each rational expression and state all ***restrictions***. $\frac{\frac{a}{b}}{\frac{c}{d}}$ $b \neq 0, c \neq 0, d \neq 0$

11. $\frac{1+\frac{1}{x+1}}{1+\frac{3}{x-1}}$

$\frac{x-1}{x+1}$, $x \neq \pm 1, -2$

(you do not have to state that $x \neq -1$)