

Review Quiz R5

Name: Key Period: _____

Find the domain of each rational expression.

1. $\frac{2x-4}{x+7}$

$\{x \mid x \neq -7\}$

3. $\frac{3}{x^2-5x-6}$

$(x-6)(x+1)$
 $x=6 \quad x=-1$

$\{x \mid x \neq 6, -1\}$

2. $\frac{9x+12}{(2x+3)(x-5)}$

$2x+3=0$
 $x = -\frac{3}{2}$

$\{x \mid x \neq -\frac{3}{2}, 5\}$

4. $\frac{x^2-25}{x-5}$

$\{x \mid x \neq 5\}$

Write each rational expression in lowest terms.

5. $\frac{36y^2+72y}{9y^2}$

$\frac{36y(y+2)}{9y^2} = \frac{4(y+2)}{y}$

8. $\frac{r^2-r-6}{r^2+r-12}$

$\frac{(r-3)(r+2)}{(r+4)(r-3)}$

$\frac{r+2}{r+4}$

6. $\frac{-8(4-y)}{(y+2)(y-4)}$

$\frac{8(y-4)}{(y+2)(y-4)} = \frac{8}{y+2}$

9. $\frac{6y^2+11y+4}{3y^2+7y+4}$

$\frac{12 \quad 7}{3(4) \quad 7} \frac{(2y+1)(3y+4)}{(y+1)(3y+4)}$

$3y^2+3y+4y+4$
 $3y(y+1)+4(y+1)$

$\frac{24 \quad 11}{8(3) \quad 11} \frac{6y^2+8y+3y+4}{2y(3y+4)+1(3y+4)}$
 $(2y+1)(3y+4)$

7. $\frac{20r+10}{30r+15}$

$\frac{10(2r+1)}{15(2r+1)} = \frac{2}{3}$

10. $\frac{y^3-27}{y-3}$

y^3-3^3
 $\frac{(y-3)(y^2+3y+9)}{y-3} = y^2+3y+9$

Multiply or divide, as indicated.

11. $\frac{8r^3}{6r} \div \frac{5r^2}{9r^3}$

$\frac{8r^3}{6r} \cdot \frac{9r^3}{5r^2} = \frac{24r^3}{10} = \frac{12r^3}{5}$

12. $\frac{5m+25}{10} \div \frac{6m+30}{12}$

$\frac{5(m+5)}{10} \cdot \frac{12}{6(m+5)} = \frac{2}{2} = 1$

13. $\frac{y^3+y^2}{7} \cdot \frac{49}{y^4+y^3}$

$\frac{y^2(y+1)}{7} \cdot \frac{7 \cdot 7}{y^3(y+1)} = \frac{7}{y}$

$$14. \frac{6r-18}{9r^2+6r-24} \div \frac{4r-12}{12r-16}$$

$$2 \cdot \frac{\cancel{6}(r-3)}{\cancel{3}(3r-4)(r+2)} \cdot \frac{\cancel{4}(3r-4)}{\cancel{4}(r-3)}$$

$$\boxed{\frac{2}{r+2}}$$

$$3r^2+2r-8$$

$$3r^2+6r-4r-8$$

$$3r(r+2)-4(r+2)$$

$$(3r-4)(r+2)$$

$$\begin{array}{r} -24 \quad 2 \\ 6(-4) \end{array} \left| \begin{array}{l} (y+2)(y-1) \cdot (y+3)(y+1) \\ (y+4)(y-1) \quad (y+3)(y+1) \end{array} \right.$$

$$16. \frac{y^2+y-2}{y^2+3y-4} \div \frac{y^2+3y+2}{y^2+4y+3} = \boxed{\frac{y+3}{y+4}}$$

$$15. \frac{x^2+2x-15}{x^2+11x+30} \cdot \frac{x^2+2x-24}{x^2-8x+15} = \frac{(x+5)(x-3)}{(x+6)(x+5)} \cdot \frac{(x+6)(x-4)}{(x-5)(x+3)} = \boxed{\frac{x-4}{x-5}}$$

Add or subtract, as indicated.

$$17. 4 \frac{8}{5p} + \frac{3}{4p} \cdot 5$$

LCD: $20p$

$$\frac{32 + 15}{20p} = \boxed{\frac{47}{20p}}$$

$$22. \frac{4}{p-q} - \frac{2}{q-p} \left(\frac{-1}{-1} \right) \quad \text{LCD: } (p-q)$$

$$= \frac{4+2}{p-q} = \boxed{\frac{6}{p-q}}$$

$$18. 4 \frac{8}{3p} + \frac{3}{4p} \cdot 5 + \frac{9}{2p} \cdot 6$$

LCD: $2^2 \cdot 3p$

$$\frac{32 + 15 + 54}{12p} = \boxed{\frac{101}{12p}}$$

$$23. \frac{5}{x+2} + \frac{2}{x^2-2x+4} - \frac{60}{x^3+8}$$

$x^3+8 = x^3+2^3 = (x+2)(x^2-2x+4) \rightarrow$

$$19. \frac{z}{z} \cdot \frac{3}{z} + \frac{x}{z^2}$$

$$\boxed{\frac{3z+x}{z^2}}$$

$$\begin{array}{r} -10 \quad -9 \\ -10(1) \end{array} \left| \begin{array}{l} 2p^2 - 10p + 1p - 5 \\ 2p(p-5) + 1(p-5) \end{array} \right.$$

$$24. \frac{p}{2p^2-9p-5} - \frac{2p}{6p^2-p-2}$$

$$\frac{p}{(2p+1)(p-5)} - \frac{2p}{(2p+1)(3p-2)}$$

$$\begin{array}{r} -12 \quad -1 \\ -4(3) \end{array} \left| \begin{array}{l} 6p^2 - 4p + 3p - 2 \\ 2p(3p-2) + 1(3p-2) \end{array} \right.$$

$$20. \frac{7x+8}{3x+2} - \frac{x+4}{3x+2} = \boxed{2}$$

$$21. \frac{m+1}{m-1} + \frac{m-1}{m+1} = \frac{2m^2+2}{(m-1)(m+1)}$$

$$(24) \quad \frac{(3p-2)p}{(2p+1)(p-5)} - \frac{2p(p-5)}{(2p+1)(3p-2)}$$

$$\text{LCD: } (2p+1)(p-5)(3p-2)$$

$$\frac{3p^2 - 2p - 2p^2 + 10p}{\text{LCD}} = \boxed{\frac{p^2 + 8p}{(2p+1)(p-5)(3p-2)}}$$

$$20. \quad \frac{7x + 8 - x - 4}{3x+2} = \frac{6x+4}{3x+2} = \frac{2(3x+2)}{3x+2} = \boxed{2}$$

$$21. \quad \frac{(m+1)m+1}{m-1} + \frac{m-1(m-1)}{m+1} = \frac{m^2 + 2m + 1 + m^2 - 2m + 1}{(m-1)(m+1)}$$

$$\text{LCD: } (m-1)(m+1)$$

$$= \boxed{\frac{2m^2 + 2}{(m-1)(m+1)}}$$

$$23. \quad \frac{5x^2 - 10x + 20 + 2x + 4 - 60}{\text{LCD}}$$

$$= \boxed{\frac{5x^2 - 8x - 36}{x^2 + 8}}$$