

Student: _____ Instructor: Dawn Nolan
 Date: _____ Course: P5 Algebra 1 Honors Assignment: Review 11.1 - 11.5

1. What is the simplified form of $\frac{3x-12}{x^2-2x-8}$? State any excluded values.

The simplified form of $\frac{3x-12}{x^2-2x-8}$ is $\frac{3}{x+2}$. $3(x-4)$
 (Simplify your answer.) $(x+2)(x-4)=0$
 The excluded value(s) of x is(are) -2, 4. $x+2=0$ $x-4=0$
 (Use a comma to separate answers as needed.) x^2-2x-8 $\frac{3x-12}{3}$ $\frac{-8}{1 \cdot 8}$ $\frac{-8}{2 \cdot 4}$
 $(x+2)(x-4)$

2. Simplify the following expression. State any excluded values.

$\frac{49x^4}{63x^6} = \frac{7 \cdot 7 \cdot x \cdot x \cdot x \cdot x}{7 \cdot 9 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x} = \frac{7}{9x^2}$ $x = -2$ $x = 4$ $\frac{x^4}{x^6} = \frac{1}{x^2}$
 The simplified form is $\frac{7}{9x^2}$, where $x \neq 0$. (Use a comma to separate answers as needed.)

3. Reduce the rational expression to lowest terms. Identify all numbers that must be excluded from the domain of the given rational expression.

$\frac{6t-18}{t^2-9}$ $\frac{6(t-3)}{(t+3)(t-3)}$ t^2-9 $(t+3)(t-3)$ $\frac{-9}{1 \cdot 9}$ $\frac{-9}{3 \cdot 3}$
 Reduce the rational expression to lowest terms. $\frac{6(t-3)}{(t+3)(t-3)}$ $\frac{t+3=0}{t=-3}$ $a^2-b^2 =$
 (Simplify your answer.) $\frac{6}{t+3}$ $\frac{-3-3}{t=-3}$ $(a+b)(a-b)$
 Identify all numbers that must be excluded from the domain of the rational expression. $t-3=0$ $t=3$
 $t \neq -3, 3$ $\frac{t+3}{t=3}$
 (Use a comma to separate answers as needed.)

4. Multiply.

$\frac{3}{8t} \cdot \frac{5}{t^5} = \frac{3 \cdot 5}{8t^6} = \frac{3 \cdot 5}{2 \cdot 2 \cdot 2 t^6}$
 $\frac{3}{8t} \cdot \frac{5}{t^5} = \frac{15}{8t^6}$ (Simplify your answer. Type your answer in factored form.)

5. Multiply.

$\frac{x^2+10x+25}{2x^2-50} \cdot \frac{5x-25}{2x}$ $\frac{(x^2+10x+25)(5x-25)}{(2x^2-50)(2x)}$ $\frac{5x}{5x}$ $(x+5)(x+5)$
 $\frac{x^2+10x+25}{2x^2-50} \cdot \frac{5x-25}{2x} = \frac{5(x+5)}{4x}$ $\frac{(x+5)(x+5)5(x-5)}{2(x+5)(x-5)2x}$ $\frac{5x-25}{5}$ $\frac{5x-25}{5}$
 (Simplify your answer. Type your answer in factored form.) $\frac{5(x+5)}{4x}$ $\frac{2x^2-50}{2(x^2-25)}$ $2(x+5)(x-5)$

6. Divide.

$$\frac{x^2+6x+5}{x^2+4x+3} \div \frac{x+5}{2x+8}$$

Handwritten work:

$$\frac{(x^2+6x+5) \cdot (2x+8)}{(x^2+4x+3) \cdot (x+5)}$$

$$\frac{(x+1)(x+5) \cancel{2} \cancel{2} (x+4)}{(x+1)(x+3) \cancel{2} (x+4)}$$

$$\frac{x+5}{x+3}$$

(Simplify your answer. Type your answer in factored form)

7. Simplify the following complex expression.

$$\frac{\frac{c+4}{c^2+c-20}}{\frac{2c^2+8c}{2c^2-7c-4}}$$

Handwritten work:

$$\frac{(c+4)}{(c^2+c-20)} \cdot \frac{(2c^2-7c-4)}{(2c^2+8c)}$$

$$\frac{(c+4) \cancel{(c-4)} (2c+1)}{\cancel{(c-4)} (c+5) 2c \cancel{(c+4)}}$$

$$\frac{2c^2+8c}{2c(c+4)} \cdot \frac{2c^2-7c-4}{2c^2+8c}$$

$$\frac{2c^2+8c}{2c(c+4)} \cdot \frac{2c^2-7c-4}{2c^2+8c}$$

(Simplify your answer. Type your answer in factored form.)

8. Divide.

$$\frac{(15m^3+12m^2-6m-2) \div 3m^2}{(15m^3+12m^2-6m-2) \div 3m^2} \div \frac{c(2c+1)-4(2c+1)}{c(2c+1)-4(2c+1)}$$

Handwritten work:

$$\frac{5m+4-\frac{2}{m}-\frac{2}{3m^2}}{5m+4-\frac{2}{m}-\frac{2}{3m^2}}$$

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

9. Divide.

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

Handwritten work:

$$y-4 + \frac{14}{y+3}$$

10. Divide.

$$\frac{(2y+8y^2+7) \div (3+2y)}{(2y+8y^2+7) \div (3+2y)}$$

Handwritten work:

$$y-4 + \frac{14}{y+3}$$

11. Add.

$$\frac{1}{3+y} + \frac{9}{3+y}$$

Handwritten work:

$$\frac{10}{3+y}$$

10. $\frac{8y^2+2y+7}{2y+3}$

Handwritten work:

$$\frac{8y^2}{2y} = 4y(2y+3)$$

$$\frac{8y^2+2y+7}{2y+3} = 4y - 5 + \frac{22}{2y+3}$$

12. Add or subtract, as indicated, and simplify the result.

$$\frac{7}{25x} + \frac{2}{5x^2} = \frac{7x}{25x^2} + \frac{10}{25x^2} = \frac{7x+10}{25x^2}$$

(Simplify your answer. Type your answer in factored form.)

LCD: $5 \cdot 5 \cdot x \cdot x = 25x^2$

13. Subtract the rational expressions and simplify if possible.

$$\frac{5x+3}{x-4} - \frac{2x+15}{x-4} = \frac{5x+3-2x-15}{x-4} = \frac{3x-12}{x-4}$$

(Simplify your answer.)

14. Find the least common denominator. $\frac{-5}{3y} \cdot \frac{15}{5y}$

The LCD is $15y$. (Simplify your answer.)

LCD: $3y \cdot 5y = 15y$

15. Find the LCD of the rational expressions $\frac{10}{x+3}$ and $\frac{1}{x-3}$.

The least common denominator is $(x+3)(x-3)$. (Do not distribute.)

LCD: $(x+3)(x-3)$

16. Add or subtract, as indicated, and simplify the result.

$$\frac{7}{4x} + \frac{3}{2x^2} = \frac{7x}{4x^2} + \frac{6}{4x^2} = \frac{7x+6}{4x^2}$$

(Simplify your answer. Type your answer in factored form.)

LCD: $2 \cdot 2 \cdot x \cdot x = 4x^2$

17. Perform the indicated operation.

$$\frac{2x}{x-7} - \frac{x}{x-3} = \frac{(x-3)2x}{(x-3)(x-7)} - \frac{x(x-7)}{(x-3)(x-7)} = \frac{2x(x-3) - x(x-7)}{(x-3)(x-7)}$$

(Simplify your answer.)

LCD: $(x-7)(x-3)$

18. Solve the equation.

$$\frac{17}{2x} + \frac{2}{5} = \frac{13}{2x}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $x =$ 5

(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

B. There is no solution.

Handwritten solution for problem 18:

$$10x \left(\frac{17}{2x} + \frac{2}{5} \right) = 10x \left(\frac{13}{2x} \right)$$

$$10x \cdot \frac{17}{2x} + 10x \cdot \frac{2}{5} = 10x \cdot \frac{13}{2x}$$

$$5 \cdot 17 + 2x \cdot 2 = 5 \cdot 13$$

$$85 + 4x = 65$$

$$-85 \quad -85$$

$$4x = -20$$

$$\frac{4x}{4} = \frac{-20}{4}$$

$x = -5$

Handwritten solution for problem 18 (alternative method):

$$\frac{17}{2x} + \frac{2}{5} = \frac{13}{2x}$$

$$\frac{17}{2x} - \frac{13}{2x} + \frac{2}{5} = 0$$

$$\frac{4}{2x} + \frac{2}{5} = 0$$

$$\frac{2}{x} + \frac{2}{5} = 0$$

$$2 \cdot 2x = -4 \cdot 5$$

$$4x = -20$$

$$\frac{4x}{4} = \frac{-20}{4}$$

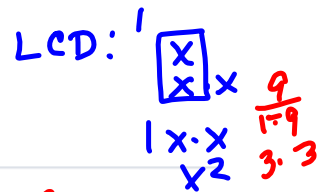
$x = -5$

$$x^2(1 - \frac{8}{x}) = (\frac{9}{x^2})x^2$$

19. Solve the equation. Check your solution.

$$1 - \frac{8}{x} = \frac{9}{x^2}$$

$$x \neq 0 \quad x^2 \cdot 1 + x^2(-\frac{8}{x}) = x^2(\frac{9}{x^2})$$



x = -1, 9

(Simplify your answer. Use a comma to separate answers.)

$$\begin{aligned} x^2 - 8x &= 9 \\ -9 & \quad -9 \\ \hline x^2 - 8x - 9 &= 0 \\ (x+1)(x-9) &= 0 \end{aligned}$$

20. Solve the following equation. Check your solution.

$p \neq 0$
 $\frac{\frac{8}{3} - \frac{4}{p}}{\frac{3p-2}{3p}}$ LCD: 3
 $\frac{8p - 4}{3p} = \frac{3p-2}{3p}$

The solution is p = 2
 (Simplify your answer. Use a comma to separate answers as needed.)

$$\begin{aligned} 8p - 4 &= 3p - 2 \\ -3p & \quad -3p \\ \hline 5p - 4 &= -2 \\ +4 & \quad +4 \\ \hline 5p &= 2 \\ p &= \frac{2}{5} \end{aligned}$$

21. Solve the following equation. Check your solution.

$\frac{15}{x+1} = \frac{x+8}{x+1}$ $x \neq -1$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. x = 7 (Simplify your answer. Use a comma to separate answers as needed.)
- B. No solution

$$x(x+8) + 1(x+8)$$

$$\frac{5p=10}{5} = \frac{2}{1}$$

$$15(x+1) = (x+1)(x+8)$$

$$15x + 15 = x^2 + 8x + 1x + 8$$

$$15x + 15 = x^2 + 9x + 8$$

$$\begin{array}{r} 15x + 15 \\ -15x - 15 \\ \hline 0 = x^2 - 6x - 7 \end{array}$$

$$0 = x^2 - 6x - 7$$

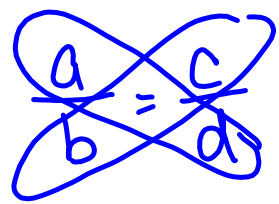
$$0 = (x+1)(x-7)$$

$$x+1=0$$

$$x-7=0$$

$$\frac{-1 \quad -1}{\hline} \boxed{x = -1}$$

$$\frac{\quad +7 \quad +7}{\hline} \boxed{x = 7}$$



$$\frac{-7}{1 \cdot 7}$$

1. $\frac{3}{x+2}$

-2,4

2. $\frac{7}{9x^2}$

0

3. $\frac{6}{t+3}$

3, -3

4. $\frac{15}{8t^6}$

5. $\frac{5(x+5)}{4x}$

6. $\frac{2(x+4)}{x+3}$

7. $\frac{2c+1}{2c(c+5)}$

8. $5m+4 - \frac{2}{m} - \frac{2}{3m^2}$

9. $y-4 + \frac{14}{y+3}$

10. $4y-5 + \frac{22}{2y+3}$

11. $\frac{10}{3+y}$

12. $\frac{7x+10}{25x^2}$

13. 3

14. 15y

15. $(x+3)(x-3)$

16. $\frac{7x+6}{4x^2}$

17. $\frac{x^2+x}{(x-7)(x-3)}$

18. A. $x =$ - 5 (Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

19. $9, -1$

20. 2

21. A. $x =$ 7 (Simplify your answer. Use a comma to separate answers as needed.)
