2-2 HW Answer Key

1. $\frac{4}{x}, x \neq 0, 2$

2. $\frac{(x+6)}{(x-6)}, x \neq 6$

3. $2, x \neq -4$

4. $3, x \neq \frac{2}{3}$

5. $\frac{2x^2-4x-1}{(x+3)(x-3)}, x \neq \pm 3$

6. $\frac{14x^2-7x+2}{(x+2)(4x-1)}, x \neq \frac{1}{4}, -2$

7. $\frac{(7)(2x-3)}{(3)(x-2)}, x \neq 2$

8. $\frac{1}{x-2}, x \neq 2, 4$

9. See next page

Alg 2 Homework 2-2 Name Key (2016)

Simplify. Identify any x-values for when the expression is undefined.

1. $\frac{4x-8}{x^2-2x} = \frac{4(x-2)}{x(x-2)} = \boxed{\frac{4}{x}}$

$x \neq 0, 2$

2. $\frac{x^2-36}{x^2-12x+36} = \frac{(x-6)(x+6)}{(x-6)(x-6)}$

$x \neq 6$ $= \boxed{\frac{x+6}{x-6}}$

Add or subtract. Identify any x-values for when the expression is undefined.

3. $\frac{3x+2}{x+4} - \frac{x-6}{x+4} = \frac{2x+8}{x+4}$

$x \neq -4$ $= \frac{2(x+4)}{x+4}$

$= \boxed{2}$

4. $\frac{9x}{3x-2} + \frac{6}{2-3x}\left(\frac{-1}{-1}\right) = \frac{9x}{3x-2} + \frac{-6}{3x-2}$

$x \neq 2/3$ $= \frac{9x-6}{3x-2}$

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

$= \boxed{3}$

5. $\frac{3x-4}{x^2-9}+\frac{2x-1}{x+3}$

$\frac{3x-4}{(x-3)(x+3)}+\frac{2x-1}{x+3}\left(\frac{x-3}{x-3}\right)$

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

$\frac{2x^2-4x-1}{(x+3)(x-3)}$

$x \neq \pm 3$

6. $\frac{3x-2}{x+2}+\frac{2x}{4x-1}$

$\frac{3x-2}{x+2}\left(\frac{4x-1}{4x-1}\right)+\frac{2x}{4x-1}\left(\frac{x+2}{x+2}\right)$

$\frac{12x^2-3x-8x+2}{(x+2)(4x-1)}+\frac{2x^2+4x}{(x+2)(4x-1)}$

$\frac{14x^2-7x+2}{(x+2)(4x-1)}$

$x \neq -2, \frac{1}{4}$

7. $\frac{2x-7}{x-2}+\frac{8x}{3x-6}$

$\left(\frac{3}{3}\right)\left(\frac{2x-7}{x-2}\right)+\frac{8x}{3(x-2)}$

$\frac{6x-21}{3(x-2)}+\frac{8x}{3(x-2)}$

$\frac{14x-21}{3(x-2)}=\frac{7(2x-3)}{3(x-2)}$

$x \neq 2$

8. $\frac{1}{x-4}-\frac{2}{x^2-6x+8}$

$\left(\frac{x-2}{x-2}\right)\left(\frac{1}{x-4}\right)-\frac{2}{(x-2)(x-4)}$

$\frac{x-2}{(x-2)(x-4)}-\frac{2}{(x-2)(x-4)}$

$\frac{x-4}{(x-2)(x-4)}=\frac{1}{x-2}$

$x \neq 2, 4$

9. Show why you need to have like denominators when adding fractions.

$\frac{1}{2}+\frac{2}{4}=\frac{1}{2}+\frac{1}{2}=1$ ✓

$\frac{1}{2}+\frac{2}{4} \stackrel{?}{=} \frac{3}{6}=\frac{1}{2}$ X

Day 2.5 Answers:

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

4. $\frac{10x+7y}{2x^2y}$ $x \neq 0, y \neq 0$

6. $\frac{7x-67}{x-9}$ $x \neq 9$

8. $\frac{1}{x+3}$ $x \neq -3, 7$

10. $\frac{-x}{(x+1)(x+3)}$ $x \neq -3, 1$

Rational Expressions Algebra 2 Unit 2 Day 3

Warm-Up

Add or Subtract:

1. $\frac{x}{x^2-3x-4}+\frac{3}{x-4}$ $\left(\frac{x+1}{x+1}\right)$

$(x-4)(x+1)$

$\frac{x}{(x-4)(x+1)}+\frac{3x+3}{(x-4)(x+1)}$

$\boxed{\frac{4x+3}{(x-4)(x+1)}}$ $x\neq 4,-1$

2. $\frac{3c}{c-5}+\frac{15}{5-c}\left(\frac{-1}{-1}\right)=\frac{3c-15}{c-5}=\frac{3(c-5)}{c-5}$

$c\neq 5$ $=3$

3. $\frac{4x-1}{x^2+3x+2}+\frac{3}{x+1}\left(\frac{x+2}{x+2}\right)$ $x\neq -2,-1$

$(x+2)(x+1)$

$\frac{4x-1+3x+6}{(x+2)(x+1)}=\boxed{\frac{7x+5}{(x+2)(x+1)}}$

$\left(\frac{3}{3}\right)\frac{y}{y^2-y-2}-\frac{1}{3y+3}\left(\frac{y-2}{y-2}\right)$

$(y-2)(y+1)$ $3(y+1)$

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

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

$=\boxed{\frac{2}{3(y-2)}}$ $y\neq 2,-1$

Solving Rational Equations Discovery

Based on your knowledge of proportions, try to solve the following equations, and state any domain restrictions.

1. $\frac{1}{6} = \frac{4}{x}$ $x = 24$

Domain Restrictions: $x \neq 0$

2. $\frac{5}{3x} = \frac{1}{6}$ $3x = 30$ $x = 10$

Domain Restrictions: $x \neq 0$

Based on your knowledge of adding and subtracting fractions, try to solve the following equations, and state any domain restrictions.

3. $\frac{1}{6}+\frac{1}{2}=\frac{1}{x}$

Domain Restrictions: $x \neq 0$

$\frac{1}{6}+\frac{3}{6}=\frac{1}{x}$

$\frac{4}{6}=\frac{1}{x}$

$4x=6$

$x=\frac{6}{4}=\frac{3}{2}$

4. $\frac{3}{x}-\frac{9}{x}=-2$

Domain Restrictions: $x \neq 0$

$\frac{-6}{x}=\frac{-2}{1}$

$-2x=-6$

$x=3$

5. $\frac{3}{x+1} - \frac{2}{x} = \frac{1}{12}$

Domain Restrictions: $x \neq 0, -1$

$\frac{3x-2x-2}{x(x+1)} = \frac{1}{12}$

$12x - 24 = x^2 + x$

$0 = x^2 - 11x + 24$

$0 = (x-8)(x-3)$

$x = 8,\ x = 3$

6. $x - \frac{15}{x+3} = \frac{5x}{x+3}$

Domain Restrictions: $x \neq -3$

$+15/(x+3) \quad +15/(x+3)$

$\frac{x}{1} = \frac{5x+15}{x+3}$

$x = \frac{5(x+3)}{x+3}$

$x = 5$