

2-1 HW Answer Key

Do warm-up 'a' after checking hw.
Next Quiz Tuesday: Days 1 & 2

1. $(2x-3)(3x+1)$

2. $(3x-1)(x+4)$

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

4. $\frac{1}{3x-1}, x \neq -4, \frac{1}{3}$

5. $\frac{-1}{x-5}, x \neq 5, -4$

6. $6x, x \neq \pm 1$

7. $\frac{5x+1}{4x-1}, x \neq \frac{1}{4}$

8. $\frac{-2x-7}{4x+5}, x \neq -\frac{5}{4}$

9. $\frac{-6}{2x-5}, x \neq \frac{5}{2}$

10. $\frac{x^2-2x+2}{2x+7}, x \neq -\frac{7}{2}$

11. The denominator will always be the opposite sign of the numerator.

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Alg 2 Homework 2-1

Name key (2016)Factor.

1. $6x^2 - 7x - 3$

$P = -18$
 $S = -7$
 $\{-9, 2\}$

$$6x^2 - 9x + 2x - 3$$

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

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

2. $3x^2 + 11x - 4$

$P = -12$
 $S = 11$
 $\{12, -1\}$

$$3x^2 + 12x - 1x - 4$$

$$3x(x+4) - 1(x+4)$$

$$(x+4)(3x-1)$$

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

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

$\{x | x \neq 3\}$

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

4. $\frac{x+4}{3x^2+11x-4}$

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

$\{x | x \neq -4, \frac{1}{3}\}$

5. $\frac{-x-4}{x^2-x-20} = \frac{-1(x+4)}{(x-5)(x+4)}$

$\{x | x \neq 5, -4\}$

$$= \frac{-1}{x-5}$$

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

$= \frac{6x(x^2-1)}{(x+1)(x-1)} = 6x$

$\{x | x \neq \pm 1\}$

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

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

$\{x | x \neq 1/4\}$

$$8. \frac{3x-4}{4x+5} - \frac{5x+3}{4x+5} = \boxed{\frac{-2x-7}{4x+5}}$$

$\{x | x \neq -5/4\}$

$$9. \frac{4x-3}{2x-5} - \frac{4x+3}{2x-5} = \boxed{\frac{-6}{2x-5}}$$

$\{x | x \neq 5/2\}$

$$10. \frac{x^2-3}{2x+7} - \frac{2x-5}{2x+7} = \boxed{\frac{x^2-2x+2}{2x+7}}$$

$\{x | x \neq -7/2\}$

11. Explain why $\frac{a-b}{b-a} = -1$.

$$\frac{a-b}{-1(a-b)} = -1$$

$-1 = -1 \checkmark$

The denominator will always be the opposite sign of the numerator.

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Rational Expressions

Algebra 2 Unit 2 Day 2

Warm-Up:

a. Simplify: $\frac{x^2-x-6}{x^2-4} = \frac{(x-3)(x+2)}{(x+2)(x-2)} = \frac{(x-3)}{(x-2)}, x \neq \pm 2$

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

Factor First

b. Evaluate your answer for

1) $x = 1$

2) $x = 3$

3) $x = -2$

c. Evaluate $\frac{x^2-x-6}{x^2-4}$ for:

1) $x = 1$

2) $x = 3$

3) $x = -2$

d. Do you always get the same answer? Why or why not?

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Adding or Subtracting UNLike Denominators:

- Get common denominators.
- Factor Denominators if possible
 - Find LCD using factors *lowest common denom.*
 - Multiply each fraction by missing factor(s)
(Ask yourself, "How can I multiply to get my denominators the same?")
 - Add or subtract numerators - Keep denominator
 - Factor numerator - if possible
 - Simplify (by dividing common factors)

Ex: $\frac{2}{5} + \frac{1}{3} = \frac{2}{5} \left(\frac{3}{3}\right) + \frac{1}{3} \left(\frac{5}{5}\right) = \frac{6}{15} + \frac{5}{15} = \frac{11}{15}$ so... $\frac{2}{5x} + \frac{1}{3x} = \frac{2}{5x} \left(\frac{3}{3}\right) + \frac{1}{3x} \left(\frac{5}{5}\right) = \frac{6}{15x} + \frac{5}{15x} = \frac{11}{15x}$

$LCD = (5)(3) = 15$ $LCD = 5(3)x = 15x$

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

$(LCD = 3(2) = 6)$

$= \frac{2x}{6} - \frac{9x}{6} = \frac{2x-9x}{6} = \frac{-7x}{6}$

2. $\frac{4}{1} - \frac{3}{2a} = \frac{(4)2a}{(1)2a} - \frac{3}{2a}$

$LCD = 2a$ $= \frac{8a}{2a} - \frac{3}{2a} = \frac{(8a-3)}{2a}$

$= \frac{8a-3}{2a}, a \neq 0$

$\frac{2a \neq 0}{2} \quad \frac{2}{2}$
 $a \neq 0$

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

$\text{LCD} = x(x+1)$

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

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

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

$x \neq 0, -1$

$\frac{x(x+1) \neq 0}{x \neq 0 \mid x+1 \neq 0, x \neq -1}$

4. $\frac{4}{x-1} + \frac{5}{x+3}$ $\text{LCD} = (x-1)(x+3)$

$$= \left(\frac{4}{x-1}\right) \frac{x+3}{x+3} + \left(\frac{5}{x+3}\right) \frac{x-1}{x-1}$$

$$= \frac{4x+12}{(x-1)(x+3)} + \frac{5x-5}{(x+3)(x-1)}$$

$$= \frac{9x+7}{(x-1)(x+3)}$$

$x \neq 1, -3$

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Do 5, 7, 8, 6 if time & in that order.

5. $\frac{7}{x-5} + \left(\frac{4}{5-x}\right) \frac{-1}{-1}$ $\frac{1}{2} + \left(\frac{1}{-2}\right) \frac{-1}{-1}$

$\text{LCD} = (x-5)$

$$= \frac{7}{x-5} + \frac{-4}{x-5}$$

$$= \frac{3}{x-5}, x \neq 5$$

6. $\frac{y+2}{y^2-y} - \frac{6}{y^2-1}$

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7. $\frac{2}{m-1} + \frac{3}{m+1} - \frac{4}{m^2-1}$ dots

$(m+1)(m-1)$

$LCD = (m-1)(m+1)$

$= \frac{2}{m-1} \cdot \frac{m+1}{m+1} + \frac{3}{m+1} \cdot \frac{m-1}{m-1} - \frac{4}{(m+1)(m-1)}$

$= \frac{2m+2 + 3m-3 - 4}{(m+1)(m-1)}$

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

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$CD = x-5$

5. $\frac{7}{x-5} + \left(\frac{4}{5-x}\right) - 1$ $-5+x$

$= \frac{7}{x-5} + \frac{-4}{x-5}$

$= \frac{3}{x-5} \quad x \neq 5$

$x-5 \neq 0$

7. $\frac{2}{m-1} + \frac{3}{m+1} - \frac{4}{m^2-1}$

$CD = y(y-1)(y+1)$

$\frac{y+1}{y+1} \cdot \frac{(y+2)^2}{y^2-1} - \frac{6}{(y+1)(y-1)} - \frac{y}{y}$

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

$= \frac{(y-1)(y-2)}{y(y+1)(y-1)} = \frac{y-2}{y(y+1)} \quad y \neq 0, -1$

$CD = (x-2)(x+1)$

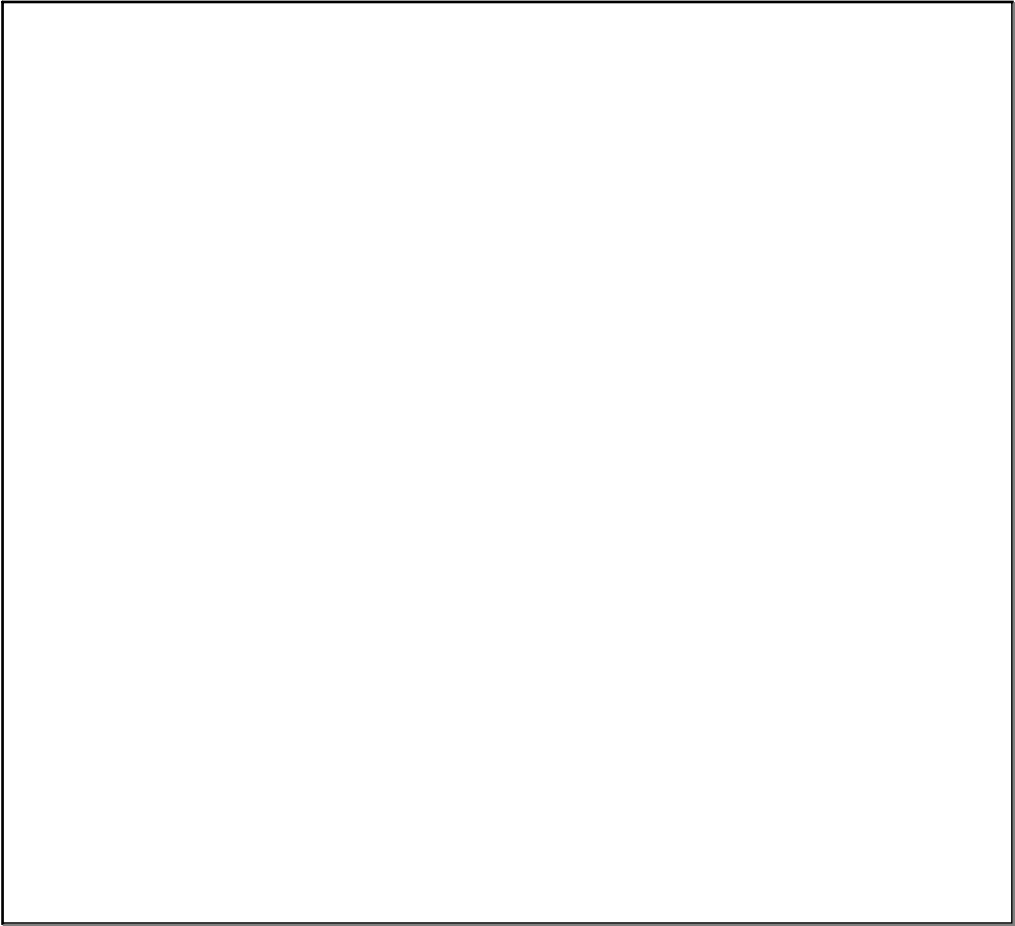
$\frac{2}{3} \left(\frac{x-1}{(x-2)(x+1)} \right) - \left(\frac{1}{3(x+1)} \right) \cdot \frac{x-2}{x-2}$

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

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

$x \neq 2, -1$

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