

Simplify. **SHOW ALL WORK** and be sure all answers are **REDUCED**.

1. $\frac{18x^4}{4y^{-7}} \div \frac{21x^{-5}}{16y^{-1}}$

1. _____

Restrictions

2. $\frac{2x^2 + 6x}{12 - 4x - x^2} \div \frac{3x + 9}{4x - 8}$

2. _____

Restrictions

3. $\frac{x - 2y}{3x - 2y} \cdot \frac{9x^2 - 4y^2}{2x^2 - 9xy + 10y^2}$

3. _____

4. $\frac{\frac{x^2 + 10x + 25}{24x}}{\frac{x + 5}{6x}} \cdot \frac{12}{x^2 - 25}$

4. _____

5. $\frac{5x}{x^2 - 49} - \frac{7}{7 - x}$

5. _____

6. $\frac{3x}{x+2} - \frac{3x}{x+5} + \frac{18}{x^2+7x+10}$

6. _____

7. $\frac{\frac{3}{x} - \frac{12}{x^2}}{\frac{6}{x} + \frac{30}{x^2}}$

7. _____

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

8. _____

Solve each equation.

9. $\frac{2x+5}{x-7} = \frac{x}{x-3}$

9. _____

10. $\frac{2x}{x+4} - \frac{3}{x} = \frac{-8-10x}{x^2+4x}$

10. _____

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

11. _____

Algebra 2

Review Sheet 8.4-8.6 #2

Answers

1. $\frac{24x^9y^6}{7}$ $x \neq 0, y \neq 0$

2. $\frac{8x}{-3(x+6)}$ $x \neq -6, 2, -3$

3. $\frac{3x+2y}{2x-5y}$

12. 120 hours no

4. $\frac{3}{x-5}$

13. 5.625 hours
or 5 hours 37½ min

5. $\frac{12x+49}{(x-7)(x+7)}$

6. $\frac{9}{x+5}$

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

8. $\frac{3(x+4)}{5(x+1)}$

9. $x < 1.90, -7.90$

10. $x = \frac{1}{2}$

11. $x = -\frac{12}{7}$

Simplify. **SHOW ALL WORK** and be sure all answers are **REDUCED**.

1. $\frac{18x^4}{4y^{-7}} \div \frac{21x^{-5}}{16y^{-1}}$ $\frac{18x^4y^7}{4} \div \frac{21y^1}{16x^5}$

$\frac{6 \cancel{18}x^4y^7}{4} \cdot \frac{4 \cancel{16}x^5}{7 \cancel{21}y^1} = \frac{24x^9y^6}{7}$

1. _____
Restrictions: $x \neq 0, y \neq 0$

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

$\frac{-x^2-4x+12}{-1(x^2+4x-12)} = \frac{4(x-2)}{-1(x+6)(x-2)}$

$\frac{2x(x+3)}{-1(x+6)(x-2)} \div \frac{3(x+3)}{4(x-2)}$

$\frac{2x(x+3)}{-1(x+6)(x-2)} \cdot \frac{4(x-2)}{3(x+3)}$

2. $\frac{8x}{-3(x+6)}$
Restrictions: $x \neq 2, -6, -3$

3. $\frac{x-2y}{3x-2y} \cdot \frac{9x^2-4y^2}{2x^2-9xy+10y^2}$

$\frac{(x-2y)}{(3x-2y)} \cdot \frac{(3x-2y)(3x+2y)}{(2x-5y)(x-2y)}$

$\frac{(3x+2y)}{(2x-5y)}$

3. _____

4. $\frac{\frac{x^2+10x+25}{24x}}{\frac{x+5}{6x}} \cdot \frac{12}{x^2-25}$

$\frac{x^2+10x+25}{24x} \cdot \frac{6x}{x+5} \cdot \frac{12}{x^2-25}$

$\frac{(x+5)(x+5)}{24x} \cdot \frac{6x}{(x+5)} \cdot \frac{12}{(x-5)(x+5)}$

4. _____
 $\frac{3}{x-5}$

5. $\frac{5x}{x^2-49} + \frac{-7}{7-x}$

$\frac{5x}{(x-7)(x+7)} + \frac{7-7}{(-x+7)}$

$\frac{5x}{(x-7)(x+7)} + \frac{7(x+7)}{(x-7)(x+7)}$

$\frac{5x+7x+49}{(x-7)(x+7)} = \frac{12x+49}{(x-7)(x+7)}$

5. _____

$$6. \frac{3x}{(x+2)} + \frac{-3x}{(x+5)} + \frac{18}{x^2+7x+10}$$

6. _____

$$\frac{3x(x+5)}{(x+2)(x+5)} + \frac{-3x(x+2)}{(x+2)(x+5)} + \frac{18}{(x+2)(x+5)}$$

$$\frac{\cancel{3x^2} + 15x - \cancel{3x^2} - 6x + 18}{(x+2)(x+5)} = \frac{9x+18}{(x+2)(x+5)} = \frac{9(x+2)}{\cancel{(x+2)}(x+5)}$$

$$7. \frac{\frac{3 \cdot 12}{x \cdot x^2}}{\frac{6 \cdot 30}{x \cdot x^2}} \rightarrow \frac{\frac{3x}{x^2} - \frac{12}{x^2}}{\frac{6x+30}{x^2}} = \frac{\frac{3x-12}{x^2}}{\frac{6x+30}{x^2}}$$

7. _____

$$\frac{3x-12}{x^2} \cdot \frac{x^2}{6x+30}$$

$$\frac{3x-12}{6x+30} = \frac{\cancel{3}(x-4)}{2 \cdot \cancel{3}(x+5)} = \frac{x-4}{2(x+5)}$$

$$8. \frac{\frac{3}{x+1}}{x-1} + \frac{\frac{x+3}{x-3}}{3x-9}$$

8. _____

$$\left(\frac{3}{x+1} \cdot \frac{x-1}{5} \right) + \left(\frac{\frac{x+3}{x-3} \cdot \frac{3x-9}{x^2+4x+3}}{\frac{x+3}{x-3} \cdot \frac{3(x-3)}{(x+3)(x+1)}} \right)$$

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

$$\frac{3x-3+15}{5(x+1)} = \frac{3x+12}{5(x+1)} = \frac{3(x+4)}{5(x+1)}$$

Solve each equation.

9. $\frac{(2x+5)}{x-7} = \frac{x}{(x-3)}$

9. -7.9, 1.9

$$(2x+5)(x-3) = x(x-7)$$

$$2x^2 - 6x + 5x - 15 = x^2 - 7x$$

$$\frac{-x^2}{-x^2} \quad \frac{-x^2}{-x^2}$$

$$x^2 - x - 15 = -7x$$

$$x^2 + 6x - 15 = 0$$

$$(x \quad)(x \quad) = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

10. $\frac{2x}{x+4} + \frac{-3}{x} = \frac{-8-10x}{x^2+4x}$

10. _____

~~$$\frac{2x}{(x+4)} + \frac{-3}{(x)} = \frac{-8-10x}{x(x+4)}$$~~

$$2x^2 - 3x - 12 = -8 - 10x$$

$$+10x + 8 \quad +8 + 10x$$

$$2x^2 + 7x - 4 = 0$$

$$(2x - 1)(x + 4) = 0$$

$$x = \frac{1}{2} \quad x = -4$$

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

11. _____

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

$$9(x+3) + 6x = x+3$$

$$9x + 27 + 6x = x + 3$$

$$15x + 27 = x + 3$$

$$\frac{14x}{14} = \frac{-24}{14}$$

$$x = \frac{-12}{7}$$

Algebra 2

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9. $x \neq 1.90, -7.90$

10. $x = \frac{1}{2}$

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