

Name McG Key

## Rational Expression Worksheet Review #16

### Adding/Subtracting/Solving

Add or subtract these rational expressions. Show your common denominators and numerators on this sheet or separate paper. **FACTOR** denominators when possible.

$$1. \quad \frac{3}{8x} - \frac{1}{4} \frac{(2x)}{(2x)} = \frac{3}{8x} - \frac{2x}{8x}$$

$$= \frac{3-2x}{8x}$$

$$2. \quad \frac{2}{6x-30} + \frac{7 \cdot b}{(x-5)b} = \frac{44}{b(x-5)}$$

$$= \frac{22}{3(x-5)}$$

$$3. \quad \frac{x \cdot 7}{x \cdot 12} - \frac{4x(4)}{3x(4)} = \frac{7x-16x}{12x}$$

$$= \frac{-9x}{12x} = \frac{-3}{4}$$

$$4. \quad \frac{3(y+5)}{y+3} + \frac{2y}{y^2+8x+15}$$

$$= \frac{3y+15+2y}{(y+3)(y+5)} = \frac{5y+15}{(y+3)(y+5)}$$

$$= \frac{5}{y+5}$$

$$5. \quad \frac{4(5x)}{4(x-7)} + \frac{2x}{4x-28} = \frac{20x+2x}{4(x-7)}$$

$$= \frac{22x}{4(x-7)}$$

$$= \frac{11x}{2(x-7)}$$

$$6. \quad \frac{6(y+3)}{y+8} - \frac{3y}{y^2+11x+24}$$

$$= \frac{6y+18-3y}{(y+3)(y+8)} = \frac{3y+18}{(y+3)(y+8)}$$

Solve each equation for x. **SHOW WORK!**

$$7. \quad \left( \frac{3x}{x+7} - \frac{8}{x+7} = \frac{-23}{x+7} \right) \frac{x+7}{1}$$

$$3x - 8 = -23$$

$$3x = -15$$

$$x = -5$$

E.V.  
x ≠ -7

$$8. \quad \left( \frac{2}{5(x-8)} + \frac{4}{5} = \frac{6}{x-8} \right) \frac{5(x-8)}{1}$$

$$2 + 4(x-8) = 30$$

$$2 + 4x - 32 = 30$$

$$4x - 30 = 30$$

$$4x = 60$$

$$x = 15$$

E.V.  
x ≠ 8

## Rational Expression Worksheet Review #17: All operations

Simplify (remember to factor when necessary).

$$\begin{array}{r} 24 \\ 5 \overline{) 120} \\ \underline{10} \phantom{0} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$$1. \frac{24}{5} \frac{120x^3y}{25xy^5} = \frac{24x^2}{5y^4}$$

$$2. \frac{\cancel{(x+4)}(x+5)}{x^2+9x+20} \cdot \frac{2x+8}{2\cancel{(x+4)}} = \frac{x+5}{2}$$

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

Multiply or divide (remember to factor when necessary).

$$4. \frac{5(n+3)}{5n+15} \cdot \frac{2(n+2)}{2n+4} = \frac{10}{12} = \frac{5}{6}$$

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

$$6. \frac{\cancel{x+3}}{10x+20} \cdot \frac{\cancel{x+2}}{x^2+4x+3} = \frac{1}{10(x+1)}$$

Add or subtract these rational expressions.

$$7. \frac{5}{12x} - \frac{3 \cdot 3x}{4 \cdot 3x} = \frac{5-9x}{12x}$$

$$8. \frac{4}{7x-35} + \frac{5(7)}{x-5(7)} = \frac{39}{7(x-5)}$$

Solve each equation for x. SHOW WORK!

$$9. \left( \frac{3x}{x+7} - \frac{8}{2(x+7)} = \frac{-22}{x+7} \right) \frac{2(x+7)}{1}$$

$$6x - 8 = -44$$

$$+8 \phantom{6x} +8$$

$$6x = -36$$

$$\boxed{x = -6}$$

E.V.  
x ≠ -7

$$10. \left( \frac{2}{x-6} + \frac{7}{x+2} = \frac{4x+2}{x^2-4x-12} \right) \frac{(x+2)(x-6)}{1}$$

$$2(x+2) + 7(x-6) = 4x+2$$

$$2x+4+7x-42 = 4x+2$$

$$5x = 40$$

$$\boxed{x = 8}$$

E.V.  
x ≠ 6, -2