

Accelerated Geom/Alg 2  
Adding and Subtracting Rational Expressions Practice

Name Key  
Date \_\_\_\_\_ Block \_\_\_\_\_

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

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

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

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

$$\frac{4(x)(x+3)}{x^2(x+3)} + \frac{-2(x+3)}{x^2(x+3)} + \frac{4(x^2)}{x^2(x+3)} = \frac{4x^2+12x-2x-6+4x^2}{x^2(x+3)} = \frac{8x^2+10x-6}{x^2(x+3)}$$

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

3.  $\frac{x}{x^2-9} + \frac{3}{x(x-3)}$

$$\frac{x(x)}{x(x+3)(x-3)} + \frac{3(x+3)}{x(x+3)(x-3)} = \frac{x^2+3x+9}{x(x+3)(x-3)}$$

3.  $\frac{x^2+3x+9}{x(x+3)(x-3)}$

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

$$\frac{x^2}{3x^2} + \frac{3(3x)}{3x^2} + \frac{-4(3)}{3x^2} = \frac{x^2+9x-12}{3x^2}$$

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

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

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

5.  $\frac{-(x^2-14x-27)}{3(x-4)(x+3)}$

$$\frac{x^2+3x+9x+3-2x^2+2x+24}{3(x-4)(x+3)} = \frac{-x^2+14x+27}{3(x-4)(x+3)}$$

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

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

$$\frac{2x^2-3x-2-6x^2-12x+3x^2+12x+12}{(x+2)^2(x-2)} = \frac{-x^2-3x+10}{(x+2)^2(x-2)} = \frac{-(x^2+3x-10)}{(x+2)^2(x-2)}$$

$$7. \frac{\frac{1}{x+2} + \frac{4}{x}}{x+2 \cdot x}$$

$$= \frac{-(x+5)(x-2)}{(x+2)^2(x-2)}$$

$$7. \frac{-11x+2}{3(x+1)(x-2)}$$

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

$$= \frac{-11x+2}{3x(x+2)}$$

$$= \frac{-11x+2}{3x(x+2)} \div \frac{x^2-x-2}{x(x+2)}$$

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

$$= \frac{-11x+2}{3x(x+2)} \cdot \frac{x(x+2)}{(x+1)(x-2)}$$

$$8. \frac{\frac{1}{x+9} + \frac{1}{5}}{2}$$

$$\frac{(x+14)(x+1)}{10}$$

8.

$$\frac{5+x+9}{5(x+9)}$$

$$= \frac{x+14}{5(x+9)} \div \frac{2}{(x+9)(x+1)}$$

$$= \frac{x+14}{5(x+9)} \cdot \frac{(x+9)(x+1)}{2}$$

$$= \frac{x+14}{5(x+9)} \cdot \frac{(x+9)(x+1)}{2}$$

$$9. \frac{\frac{2}{4x+12} + \frac{1}{2x+6}}{x+3}$$

$$\frac{1}{6}$$

9.

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

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

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

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

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

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

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

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