

5.2

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Objective: I can add and subtract rational fractions.

REVIEW

Simplify.

$$1. \frac{5}{6} + \frac{7}{8} = \frac{5 \cdot 2 \cdot 2}{2 \cdot 2 \cdot 3 \cdot 2} + \frac{7 \cdot 3}{2 \cdot 2 \cdot 2 \cdot 3}$$
$$\frac{20}{24} + \frac{21}{24} = \boxed{\frac{41}{24}}$$

Steps for adding and subtracting rational expressions

1. FACTOR to find lowest common denominator (LCD).

** multiply by what is missing on both sides

**

2. Multiply TOP AND BOTTOM (actually show this) by missing factors in LCD to make denominators the same.

3. MULTIPLY numerator BEFORE you ADD or SUBTRACT!!!!!!!!!!!!!!

4. Add or subtract like terms.

** subtract distributes

5. IF you can, factor the answer which should be a single fraction and simplify. (Do what we did yesterday.)

EXAMPLES: Simplify.

$$1. \frac{5}{(x-2)} + \frac{8x}{(x-2)}$$

$$\frac{5+8x}{x-2}$$

$$2. \frac{-6}{(x+3)} + \frac{-18}{(x+3)}$$

$$\frac{-24}{x+3}$$

$$3. \frac{3 \cdot 3 \cdot x}{3 \cdot 7 \cdot x \cdot x} + \frac{-4}{21x^2}$$

$$\frac{9x}{21x^2} + \frac{-4}{21x^2}$$
$$\frac{9x-4}{21x^2}$$

$$4. \frac{1 \cdot a}{a(a-1)} - \frac{1}{a(a-1)}$$

$$\frac{a}{a(a-1)} + \frac{-1}{a(a-1)}$$

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

$$\frac{1}{a}$$

$$5. \frac{2}{x^2-25} - \frac{1}{-2x-10}$$

$$-\frac{2 \cdot 2}{(x+5)(x-5)} + \frac{-1(x-5)}{-2(x+5)(x-5)}$$

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

$$\frac{-x+1}{-2(x+5)(x-5)}$$

$$6. \frac{x-1}{(x-5)(x-2)} + \frac{x(x-2)}{(x-5)(x-2)}$$

$$\frac{x-1}{(x-5)(x-2)} + \frac{x^2-2x}{(x-5)(x-2)}$$

$$\frac{x^2-x-1}{(x-5)(x-2)}$$

$$7. \frac{5}{(x+4)} + \frac{7}{(x-3)}$$

$$\frac{5(x-3)}{(x+4)(x-3)} + \frac{7(x+4)}{(x-3)(x+4)}$$

$$\frac{5x-15}{(x+4)(x-3)} + \frac{7x+28}{(x-3)(x+4)}$$

$$\frac{12x+13}{(x+4)(x-3)}$$

$$\frac{-8}{2} \times \frac{7}{6}$$

$$8. \frac{r+8}{r^2-6r-16} - \frac{5}{2r^2+4r}$$

$$\frac{2r(r+8)}{2r(r-8)(r+2)} + \frac{-5(r-8)}{2r(r+2)(r-8)}$$

$$\frac{2r^2+16r}{2r(r-8)(r+2)} + \frac{-5r+40}{2r(r+2)(r-8)}$$

$$\frac{2r^2+11r+40}{2r(r-8)(r+2)}$$

$$\frac{80}{11}$$

$$9. \frac{2}{x^2+11x+30} - \frac{4}{-x^2+36} \quad -(x^2-36)$$

$$-\frac{2(x-6)}{(x+6)(x+5)(x-6)} + \frac{-4(x+5)}{-(x+6)(x-6)(x+5)}$$

$$\frac{-2x+12}{-(x+6)(x+5)(x-6)} + \frac{-4x-20}{-(x+6)(x-6)(x+5)}$$

$$\frac{-6x-8}{-(x+6)(x+5)(x-6)}$$

$$\frac{-2(3x+4)}{-(x+6)(x+5)(x-6)}$$

$$\frac{2(3x+4)}{(x+6)(x+5)(x-6)}$$