

Name: key

Unit 7: Ratios Expressions Review

Determine ONLY the least common denominator for each expression.

20
10 2

$$1. \frac{3n}{n^2-8n-20} + \frac{7n}{n^2-4}$$

$(n-10)(n+2) \quad (n+2)(n-2)$

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

$3(x+3)$

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

LCD: $(n-10)(n+2)(n-2)$

LCD: $3(x+3)$

LCD: $(x+4)(x-4)$

$$4. \frac{n}{(n+3)^2(n-4)} + \frac{4n}{(n-4)(n+7)}$$

$$5. \frac{x}{7x^2+11x+4} + \frac{10}{x+1}$$

$7 \times 4 = 28$
 $7x^2+7x+4x+4$
 $7x(x+1) + 4(x+1)$

$$6. \frac{12x}{x^2+10x+21} + \frac{7}{(x+3)(x-1)}$$

$(x+7)(x+3)$

LCD: $(n+3)^2(n-4)(n+7)$

LCD: $(7x+4)(x+1)$

LCD: $(x+7)(x+3)(x-1)$

Simplify.

$$7. \frac{6n^2+18n}{n+3}$$

$\frac{6n(n+3)}{n+3}$

$6n$

$$8. \frac{4x^2+12x}{2x^2-3x-35} \cdot \frac{8x^2-40x}{3x+9}$$

$\frac{70}{2 \cdot 35} = \frac{70}{70}$
 $\frac{70}{-10 \cdot -7} = \frac{70}{70}$

$2x^2 \cdot 70 \cdot 7x + 35$
 $2x(x-5) \cdot 7(x+5)$
 $(2x+7)(x-5)$

$\frac{4x(x+3)}{(2x+7)(x-5)} \cdot \frac{8x(x-5)}{3(x+3)}$

$\frac{32x^2}{3(2x+7)}$

Perform the indicated operation.

$$9. \frac{x}{x^2-9} + \frac{4}{x-3} \cdot \frac{(x+3)}{(x+3)}$$

$x+4x+12$

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

$$10. \frac{5}{3x} \cdot \frac{6}{3x} + \frac{2}{5x} \cdot \frac{3}{5x}$$

$\frac{30+6}{15x} = \frac{36}{15x} = \frac{12}{5x}$

$$1. \quad \frac{x}{x-2} = -\frac{6}{x-5}$$

$$-6x + 12 = x^2 - 5x$$

$$x^2 + x - 12 = 0$$

$$(x-3)(x+4) = 0$$

$$\boxed{x=3, x=-4}$$

$$12. \quad \frac{x-4}{x+5} - \frac{1}{x^2+x-20} = \frac{5x-25}{x^2+x-20}$$

$(x+5)(x-4) \quad (x+5)(x-4)$

$$x^2 - 4x - 4x + 16 = 1 + 5x - 25$$

$$x^2 - 8x + 16 = 1 + 5x - 24$$

$$x^2 - 13x + 40 = 0$$

$$(x-8)(x-5) = 0$$

$$\boxed{x=8}$$

$$x=5$$

$$13. \quad \frac{x^2-1}{x^2-8x+15} + \frac{1}{x-3} = \frac{x+6}{x-5}$$

$$x^2 - 1 + x - 5 = x^2 - 3x + 6x - 18$$

$$x - 6 = 3x - 18$$

$$12 = 2x$$

$$\boxed{x=6}$$