

Solutions to X / 2 Quiz 2

$$\textcircled{1} \frac{60x+15}{12x-48} \cdot \frac{4x^2-4x-48}{24x+18}$$

Step 1 Apply distributive property

$$\frac{15(4x+1)}{12(x-4)} \cdot \frac{4(x^2-x-12)}{6(4x+3)}$$

Step 2 Factor remaining quadratics

$$\frac{15(4x+1)}{12(x-4)} \cdot \frac{4(x-4)(x+3)}{6(4x+3)}$$

Step 3 Group monomials & binomials

$$\frac{15 \cdot 4}{12 \cdot 6} \cdot \frac{(4x+1)(x-4)(x+3)}{(x-4)(4x+3)}$$

Step 4 Simplify fractions

$$\frac{5}{72} \cdot \frac{(4x+1)(x+3)}{(4x+3)} \cdot \frac{\cancel{(x-4)}}{\cancel{(x-4)}}$$

$$\boxed{\frac{5(4x+1)(x+3)}{6(4x+3)}}$$

Solutions to X/1: Rationals Quiz

$$\textcircled{2} \quad \frac{6x^2 + 2x - 4}{12x^2 - 40x + 12} \div \frac{12x - 8}{15x + 45}$$

Step 1 Rewrite Division as multiplication

$$\frac{6x^2 + 2x - 4}{12x^2 - 40x + 12} \cdot \frac{15x + 45}{12x - 8}$$

Step 2 Apply distributive property

$$\frac{2(3x^2 + 1x - 2)}{4(3x^2 - 10x + 3)} \cdot \frac{15(x + 3)}{4(3x - 2)}$$

Step 3 Factor remaining quadratics

$$\frac{2(3x - 2)(x + 1)}{4(3x - 1)(x - 3)} \cdot \frac{15(x + 3)}{4(3x - 2)}$$

Step 4 Group monomials and binomials

$$\frac{2 \cdot 15}{4 \cdot 4} \cdot \frac{(3x - 2)(x + 1)(x + 3)}{(3x - 1)(x - 3)(3x - 2)} = \frac{30}{16} \cdot \frac{(3x - 2)(x + 1)(x + 3)}{(3x - 2)(x - 3)(3x - 1)}$$

Step 5 Simplify fractions

$$\frac{30}{8 \cdot 16} \cdot \frac{(3x - 2)(x + 1)(x + 3)}{(3x - 2)(x - 3)(3x - 1)} = \boxed{\frac{15(x + 1)(x + 3)}{8(x - 3)(3x - 1)}}$$

Solutions to $X/\frac{6}{0}$ Rationals Quiz (2)

$$\textcircled{1} \quad \frac{2x^2 - 7x + 6}{x^2 - 8x + 12}$$

$$\frac{18x}{12x^2 - 69x + 18}$$

Step 1 Rewrite as Horizontal Division

$$\frac{2x^2 - 7x + 6}{x^2 - 8x + 12} \div \frac{18x}{12x^2 - 69x - 18}$$

Step 2 Rewrite as Multiplication

$$\frac{2x^2 - 7x + 6}{x^2 - 8x + 12} \cdot \frac{12x^2 - 69x - 18}{18x}$$

Step 3 Factor everything

$$\frac{(2x - 3)(x - 2)}{(x - 2)(x - 6)} \cdot \frac{3(4x^2 - 23x - 6)}{18x}$$

$$\frac{(2x - 3)(x - 2)}{(x - 6)(x - 2)} \cdot \frac{3(4x + 1)(x - 6)}{18x}$$

Step 4 Group monomials and binomials

$$\frac{3}{18x} \cdot \frac{(x - 2)(x - 6)}{(x - 2)(x - 6)} \cdot \frac{(4x + 1)(2x - 3)}{1}$$

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

Step 5
Simplify
Fractions

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

Solutions X / ÷ Rationals Quiz (2)

$$\textcircled{4} \frac{x^3 + 3x^2 - 18x}{3x^2 + 17x - 6} \div \frac{3x^2 - 8x - 3}{x^2 + x - 30} \cdot \frac{27x^2 - 3}{15x^3 - 5x^2}$$

Step 1 Rewrite Division as Multiplication

$$\frac{x^3 + 3x^2 - 18x}{3x^2 + 17x - 6} \cdot \frac{x^2 + x - 30}{3x^2 - 8x - 3} \cdot \frac{27x^2 - 3}{15x^3 - 5x^2}$$

Step 2 Apply Distributive Property

$$\frac{x(x^2 + 3x - 18)}{3x^2 + 17x - 6} \cdot \frac{x^2 + x - 30}{3x^2 - 8x - 3} \cdot \frac{3(9x^2 - 1)}{5x^2(3x - 1)}$$

Step 3 Factor Quadratics

$$\frac{x(x+6)(x-3)}{(3x-1)(x+6)} \cdot \frac{(x+6)(x-5)}{(3x+1)(x-3)} \cdot \frac{3(3x-1)(3x+1)}{5x^2(3x-1)}$$

Step 4 Group Monomials and Binomials

$$\frac{3x}{5x^2} \cdot \frac{(x+6)(x-3)(3x-1)(3x+1)}{(x+6)(x-3)(3x-1)(3x+1)} \cdot \frac{(x+6)(x-5)}{(3x-1)}$$

Step 5 Simplify Fractions

$$\frac{3}{5x} \cdot 1 \cdot \frac{(x+6)(x-5)}{(3x-1)} =$$

$$\boxed{\frac{3(x+6)(x-5)}{5x(3x-1)}}$$