

Solutions to X/÷ Quiz (2)

$$\textcircled{1} \frac{10x-40}{60x+15}, \frac{24x+18}{4x^2-4x-48}$$

Step 1 Apply distributive property

$$\frac{10(x-4)}{15(4x+1)}, \frac{6(4x+3)}{4(x^2-x-12)}$$

Step 2 Factor remaining quadratics

$$\frac{10(x-4)}{15(4x+1)}, \frac{6(4x+3)}{4(x-4)(x+3)}$$

Step 3 Group monomials and binomials

$$\frac{10 \cdot 6}{15 \cdot 4} \cdot \frac{(x-4)(4x+3)}{(4x+1)(x-4)(x+3)}$$

Step 4 Simplify fractions

$$\frac{\cancel{60}}{\cancel{60}} \cdot \frac{\cancel{(x-4)}(4x+3)}{\cancel{(x-4)}(4x+1)(x+3)}$$

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

Solutions $x/3$ of Rationals Q4(2) ②

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

Step 1) Rewrite division as multiplication

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

Step 2) Use the distributive property

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

Step 3) Factor remaining quadratics

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

Step 4) Group monomial & binomials

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

Step 5) Simplify fractions

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

Solutions x/\circ Rationals Quiz 2

$$\textcircled{3} \frac{2x^2 - 7x + 6}{x^2 - 8x + 12}$$

$$\frac{24x^2}{8x^2 - 46x - 12}$$

Step 1 Rewrite Vertical Division to Horizontal Division

$$\frac{2x^2 - 7x + 6}{x^2 - 8x + 12} \div \frac{24x^2}{8x^2 - 46x - 12}$$

Step 2 Rewrite Division as Multiplication

$$\frac{2x^2 - 7x + 6}{x^2 - 8x + 12} \cdot \frac{8x^2 - 46x - 12}{24x^2}$$

Step 3 Apply Distributive Property

$$\frac{2x^2 - 7x + 6}{x^2 - 8x + 12} \cdot \frac{2(4x^2 - 23x - 6)}{24x^2}$$

Step 4 Factor Quadratics

$$\frac{(2x - 3)(x - 2)}{(x - 2)(x - 6)} \cdot \frac{2(4x + 1)(x - 6)}{24x^2}$$

Step 5 Group monomials and binomials

$$\frac{2}{24x^2} \cdot \frac{(x - 2)(x - 6)(4x + 1)(2x - 3)}{(x - 2)(x - 6)} =$$

Step 6 Simplify

$(4x + 1)(2x - 3)$
$12x^2$

Solutions to X/2 Rational Quiz (2)

$$(4) \frac{x^3 + 3x^2 - 18x}{3x^2 + 17x - 6} \div \frac{3x^2 - 8x - 3}{x^2 + x - 30} \cdot \frac{18x^2 - 2}{12x^3 - 4x^2}$$

Step (1) Rewrite division as multiplication:

$$\frac{x^3 + 3x^2 - 18x}{3x^2 + 17x - 6} \cdot \frac{x^2 + x - 30}{3x^2 - 8x - 3} \cdot \frac{18x^2 - 2}{12x^3 - 4x^2}$$

Step (2) Apply Distributive Property

$$\frac{x(x^2 + 3x - 18)}{3x^2 + 17x - 6} \cdot \frac{x^2 + x - 30}{3x^2 - 8x - 3} \cdot \frac{2(9x^2 - 1)}{4x^2(3x - 1)}$$

Step (3) Factor Quadratics

$$\frac{x(x+6)(x-3)}{(3x-1)(x+6)} \cdot \frac{(x+6)(x-5)}{(3x+1)(x-3)} \cdot \frac{2(3x-1)(3x+1)}{4x^2(3x-1)}$$

Step (4) Group Monomials and Binomials

$$\frac{2x}{4x^2} \cdot \frac{(x+6)(x-3)(3x-1)(3x+1)(x+6)(x-5)}{(x+6)(x-3)(3x-1)(3x+1)(3x-1)}$$

Step (5) Simplify Fractions

$$\frac{\cancel{2x}}{\cancel{4x^2} \cdot 2x} \cdot \frac{(x+6)(x-5)}{(3x-1)} =$$

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