

Fractions

Adding/Subtracting - Make common denominator.

Multiplying/Dividing - Numerator $\cdot$ Numerator
Denominator $\cdot$ Denominator (KSF for $\div$)

Reducing Fractions

- the value of a fraction is not changed when the numerator and the denominator are both multiplied by or divided by the same number.

$$\text{Ex)} \quad \frac{4(x^2+2)}{5(x^2+2)} = \frac{4}{5}$$

$$\text{Note:} \quad \frac{x^2+4}{x^2} \neq 4$$

the fraction bar operates as parentheses and every term in the numerator needs to be divided by x^2 .

Ex) Reduce to lowest term:

$$\frac{4(a-1)-2}{9(a-1)-3a} = \frac{4a-4-2}{9a-9-3a} = \frac{4a-6}{6a-9}$$

$$= \frac{2(2a-3)}{3(2a-3)} = \frac{2}{3}$$

Ex) Reduce to lowest terms:

$$\frac{x^2 - 2x - 8}{x^2 - 4x}$$

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

Ex) Reduce to lowest terms:

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

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

STEPS:

- 1) Simplify numerator
- 2) Simplify denominator
- 3) Factor w/o
- 4) Cancel any common terms