Solving Rational Equations

TYPE 1 –

Fraction = Fraction

Cross multiply, then solve.

Ex 1

$\frac{2}{x} = \frac{-3}{4}$

$-3x = 8$

$\frac{-3x}{-3} = \frac{8}{-3}$

$x = \frac{-8}{3}$

Ex 2

$\frac{3}{9} = \frac{5y}{38}$

$\frac{45y}{45} = \frac{114}{45}$

$y = \frac{114}{45}$

Ex 3

$\frac{2}{6x+2} = \frac{x}{3x^2+11}$

$x(6x+2) = 2(3x^2+11)$

$6x^2 + 2x = 6x^2 + 22$

$\frac{2x}{2} = \frac{22}{2}$

$x = 11$

TYPE 2 –

Fraction = Fraction ± Fraction

(common denominator)

Drop all denominators and solve.

Ex 1

$\frac{x+2}{x^2} = \frac{1}{x^2} + \frac{3x+3}{x^2}$

$\frac{x+2}{x^2} = \frac{3x+4}{x^2}$

$x + 2 = 3x + 4$

$-3x \quad -3x$

$-2x + 2 = 4$

$-2 \quad -2$

$\frac{-2x}{-2} = \frac{2}{-2}$

$x = -1$

Ex 2

$\frac{5}{5m} + \frac{m}{5m} = \frac{4}{5m}$

$5 + m = 4$

$-5 \quad -5$

$m = -1$