$3x^2 - 2x - 5$

$A = 3 \quad B = -2 \quad C = -5$

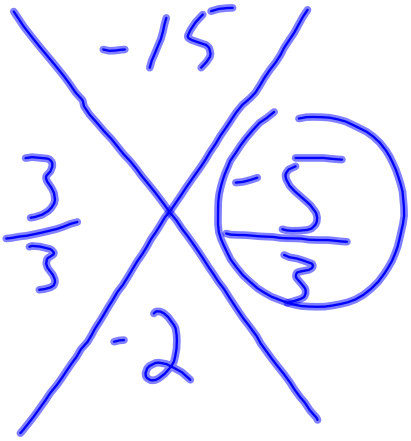
1) Top, First, Last

2) Middle, Bottom

3) Multiply, Add

4) First

5) Denominator, Numerator



$(1x+1)(3x-5)$

$(x+1)(3x-5)$

Does it Factor

$$x^3 - 3x^2 - 4x$$

$x - 4 = 0$

$+4 \quad +4$

$x = 4$

$4^3 - 3(4^2) - 4(4) = 0$

$64 - 48 - 16 = 0$

$64 - 64 = 0$

$0 = 0$

IT Factors

$x + 2 = 0$

$-2 \quad -2$

$x = -2$

$x^3 - 3x^2 - 4x$

$(-2)^3 - 3(-2)^2 - 4(-2) = 0$

$-8 - 12 + 8 = 0$

$-12 = 0$

Not a Factor

Rational Equations:

Ratio
Fractions

An equation with the variable in the denominator of a fraction.

Example: $\frac{3n+15}{4n^2} = \frac{1}{n^2} - \frac{n-3}{4n^2}$

4 steps for Solving:

1) Find the LCD - least Common Denominator
   a) Number
   b) Variable - the variable w/the highest power.
2) Multiply every Term by the LCD
3) Solve
4) Check for extraneous answers

$$\frac{3n+15}{4n^2} = \frac{1}{n^2} - \frac{n-3}{4n^2}$$

LCD $= 4n^2$

$4n - n - 3$

$3n+15 = 4-(n-3)$

$3n+15 = 4-n+3$

$3n+15 = 7-n$

$+n \quad -15 \quad -15 \quad +n$

$\frac{4n}{4} = \frac{-8}{4}$

$n = -2$

Ex: $\frac{1}{3x^2} = \frac{x+3}{2x^2} - \frac{1}{6x^2}$ LCD: $6x^2$

$2 = 3(x+3) - 1$

$2 = 3x + 9 - 1$

$2 = 3x + 8$

$-8 \quad -8$

$-6 = 3x$

$-2 = x$