Quadratics

1st factoring

$x^2 + 8x + 15 = 0$

$(x+3)(x+5) = 0$

$\therefore\ x = -3$ or -5

Completing the square

$x^2 + 8x + 11 = 0$

$x^2 + 8x = -11$

$x^2 + 8x + \underline{16} = -11 + 16$

$\sqrt{x^2}$

$\sqrt{(x+4)^2} = \sqrt{5}$

$(x+4) = \pm\sqrt{5}$

$x = \pm\sqrt{5} - 4$

$-1.76,\ -6.23$

$3x^2 + 8x - 7 = 0$

$3x^2 + 8x = 7$

$3(x^2 + \frac{8}{3}x + \frac{16}{9}) = 7$

Looks hard!

Quadratic Formula

The bazooka that "solves" the quadratic impossibility

if $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Ex $3x^2 + 8x - 7 = 0$

figure that out

$a = 3$

$b = 8$

$c = -7$

$\frac{4+8}{2}$

$$x = \frac{-8 \pm \sqrt{8^2 - 4(3)(-7)}}{2 \cdot 3} \leftarrow 148$$

$$x = \frac{-8 \pm \sqrt{148}}{6}$$

$$x = \frac{-8 + \sqrt{148}}{6} \text{ or } \frac{-8 - \sqrt{148}}{6}$$

$x = .69$ or -3.36

Ex #2

Find the roots

$$5x^2 - 10x - 4 = 0$$