Guide to:
Solving quadratic equations

maths Links

Explanation:

To solve a quadratic equation by factorising, first rearrange the equation so that one side equals **zero** (**$ax^2 + bx + c = 0$**). Never factorise while there is a non-zero number on the right-hand side.

Factorise the quadratic expression into two brackets, then set each bracket equal to **0** and solve for **x** (because if two brackets multiply to give 0, at least one bracket must equal 0). Notice that the signs of the roots are opposite to the signs in the brackets.

Example 1: Solve **$x^2 - 8x + 15 = 0$**.

Solution:

Multiply to **+15** and add to **−8** → **−3** and **−5**
Factorise: **$(x - 3)(x - 5) = 0$**
Either **$x - 3 = 0$** or **$x - 5 = 0$**
Answer: $x = 3$ or $x = 5$

Example 2: Solve **$x^2 + 3x = 18$**.

Solution:

Rearrange to equal 0: **$x^2 + 3x - 18 = 0$**
Multiply to **−18**, add to **+3** → **+6** and **−3**
Factorise: **$(x + 6)(x - 3) = 0$**
$x + 6 = 0$ → **$x = -6$**; $x - 3 = 0$ → **$x = 3$**
Answer: $x = -6$ or $x = 3$

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