Guide to:
Drawing quadratic graphs

maths Links

Explanation:

A quadratic graph $\mathbf{y = ax^2 + bx + c}$ is a smooth, symmetrical U-shaped curve called a **parabola** (or ∩-shaped if **a** is negative). When substituting negative values into $\mathbf{x^2}$, always use brackets: squaring a negative number gives a **positive** answer, e.g. $\mathbf{(-2)^2 = +4}$.

Plot each **(x, y)** point from your table and join them with a single smooth curve (never connect points with straight ruler lines). The bottom of the curve is the **minimum turning point**, and the points where it crosses the x-axis (y = 0) are the **roots**.

Example 1: Complete the table for $\mathbf{y = x^2 - 2x - 3}$.

Solution:

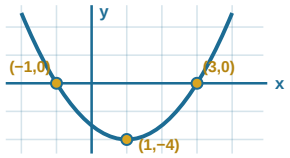
x	−2	−1	0	1	2	3	4
y	**5**	**0**	**−3**	**−4**	**−3**	**0**	**5**

For x = −2: $(-2)^2 - 2(-2) - 3 = 4 + 4 - 3 =$ **5**
Notice the symmetrical y-values around **(1, −4)**.

Example 2: From the graph of $\mathbf{y = x^2 - 2x - 3}$, find (a) the turning point and (b) the roots of $\mathbf{x^2 - 2x - 3 = 0}$.

Solution:

(a) Minimum point on curve: **(1, −4)**
(b) Crosses **y = 0** at x = −1 and 3
Ans: (1, −4); x = −1, 3



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ken@mathslinks.co.uk