

(9) Sketching Quadratic Graphs

WORKING AT D/E

(1) Sketch the graph of $y = x^2 - 4x - 12$ showing where the graph crosses the coordinate axes.

(2) Sketch the graph of $y = -x^2 + 12$ showing the roots of the equation in the form $x = \pm p\sqrt{q}$

(3) By completing the square, sketch the graph of $y = x^2 - 2x + 4$, showing the coordinates of the minimum point.

WORKING AT B/C

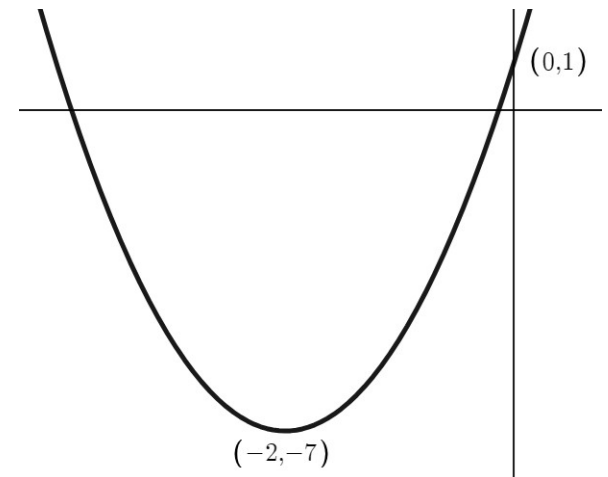
(1) Sketch the graph of $y = x^2 - 4x - 12$ showing the roots, the y intercept and the minimum point.

(2) Sketch the graph of $y = -x^2 + 6x + 12$ showing the equation of the axes of symmetry and the coordinates of the turning point. State whether the turning point is a maximum or minimum.

(3) Sketch the graph of $y = 5x^2 - 10x + 1$ showing the coordinates of the minimum point and the roots of the equation.

WORKING AT A*/A

(1) The graph of $y = 2x^2 + bx + c$ is shown below. The points $(0,1)$ and $(-2,-7)$ lie on the curve.



Find the roots of the equation in the form:

$$x = p \pm r\sqrt{q}$$

(2) Sketch the graph of $y = -7x^2 + 10x + 1$, showing the coordinates of the turning point and any points where the graph crosses the coordinate axes.

(3) Given that the graph of $y = x^2 + px + q$ doesn't touch or cross the x axis, show that $p^2 < 4q$.