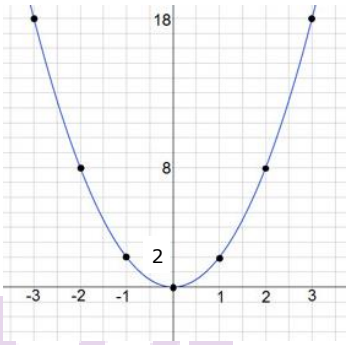
Graphs of Parabolas

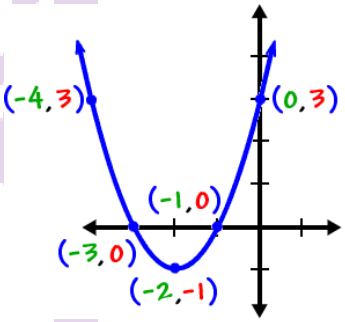
N5 Relationships HW

Calculators permitted but all working needs to be shown.

Unit level:



1. The diagram shows the parabola with equation $y = kx^2$
What is the value of k?



2. The equation of the quadratic function whose graph is shown is of the form $y = (x + a)^2 + b$, where a and b are integers. Write down the values of a and b.

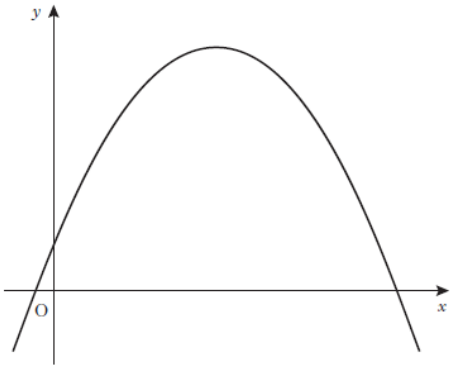
3. Sketch the graph of $y = (x + 1)(x - 7)$, marking clearly where the graph crosses both axes and state the coordinates of the turning point.

4. A parabola has equation $y = (x - 4)^2 - 3$.

a. Write down the equation of its axis of symmetry

b. Write down the coordinates of the turning point on the parabola and state whether it is a maximum or minimum.

Assessment level:



5. The diagram below shows part of the graph of $y = 20 - (x - 4)^2$

(a) State the coordinates of the maximum turning point.

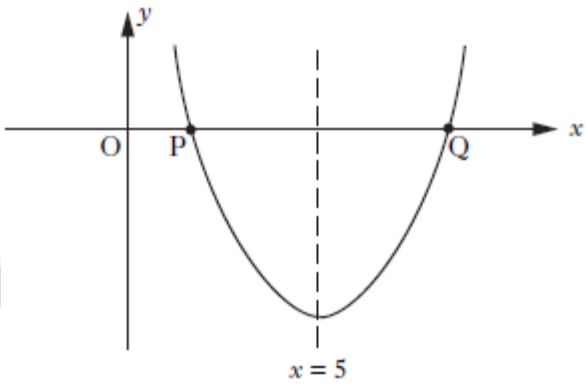
(b) State the equation of the axis of symmetry.

6. The graph below shows part of a parabola with equation of the form $y = (x + a)^2 + b$.

(a) State the value of a.

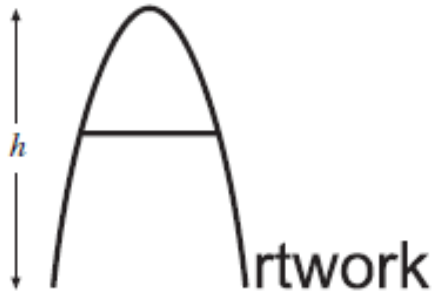
(b) P is the point (2, 0). State the coordinates of Q.

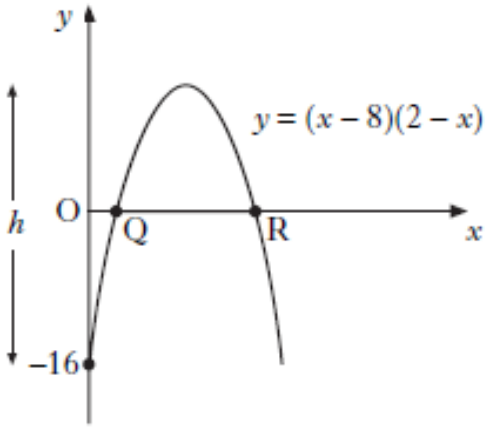
(c) Calculate the value of b.



7. The curved part of the letter A in the Artwork logo is in the shape of a parabola.

The equation of this parabola is $y = (x - 8)(2 - x)$.





(a) Write down the coordinates of Q and R.

(b) Calculate the height, h, of the letter A.

8. A parabola has equation $y = x^2 - 8x + 19$.

(a) Write the equation in the form $y = (x + a)^2 + b$.

(b) Sketch the graph of $y = x^2 - 8x + 19$, showing the coordinates of the turning point and the point of intersection with the y-axis.