



## CHAPTER 3: QUADRATIC FUNCTIONS

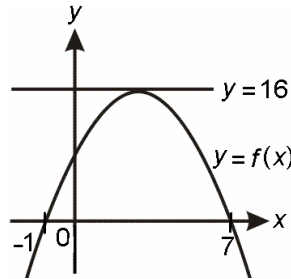


### Paper 1

1.

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The diagram shows the graph of a quadratic function  $y = f(x)$ . The straight line  $y = 16$  is a tangent to the curve  $y = f(x)$ .



- Write the equation of the axis of symmetry of the curve.
- Express  $f(x)$  in the form  $c - (x + b)^2$ , where  $b$  and  $c$  are constants.

2.

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Find the range of values of  $x$  for which  $(2x - 3)(x + 2) < 3 - 2x$ .

3.

A quadratic function is given as  $f(x) = 2x^2 - 4x + 5$ .

- Express the function  $f(x)$  in the form  $a(x + h)^2 + k$ , where  $a$ ,  $h$  and  $k$  are constants.
- Determine if the function has a maximum or minimum point and state the coordinates of the point.

4.

The graph of the quadratic function  $f(x) = x^2 + 4x - 5$  intersects the  $x$ -axis at two different points.

- Find the coordinates of the points.
- Hence, state the equation of the axis of symmetry.

5.

Find the range of values of  $k$  for which  $2x^2 + 8 > 3kx$  for all the values of  $x$ .

6.

Given that the graph of the function  $f(x) = kx^2 - 5x + 10$  does not intersect the  $x$ -axis, find the range of values of  $k$ .