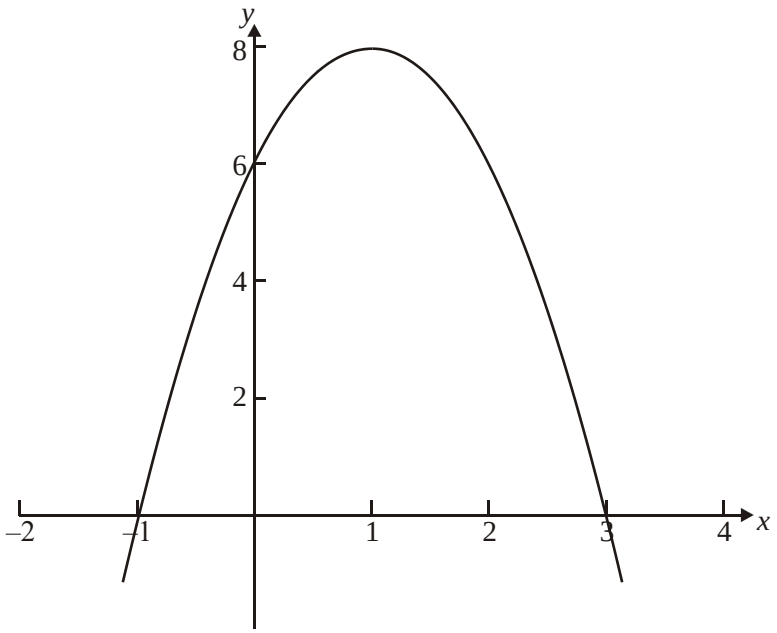
1. The figure below shows part of the graph of a quadratic function $y = ax^2 + 4x + c$.



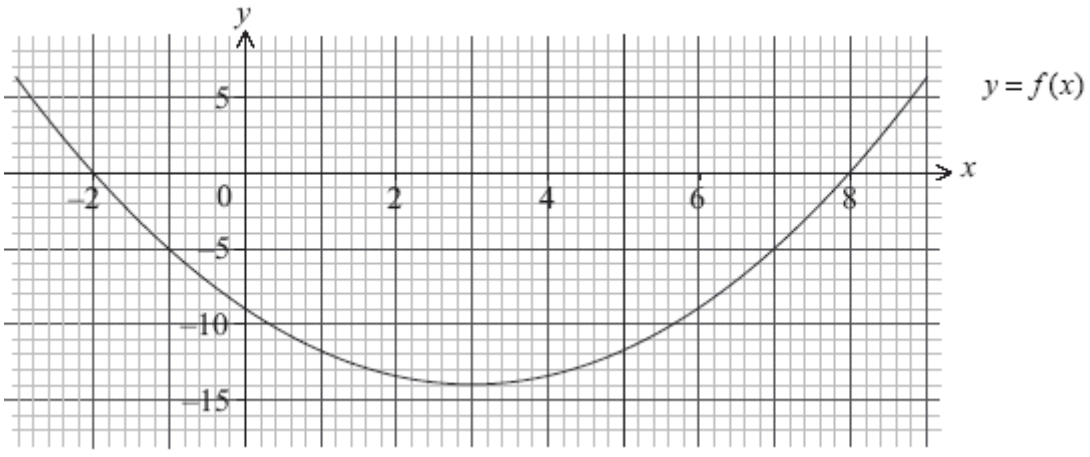
(a) Write down the value of c.

(b) Find the value of a.

(c) Write the quadratic function in its factorized form.

(Total 8 marks)

2. The graph of a quadratic function $y = f(x)$ is given below.



(a) Write down the equation of the axis of symmetry.

(2)

(b) Write down the coordinates of the minimum point.

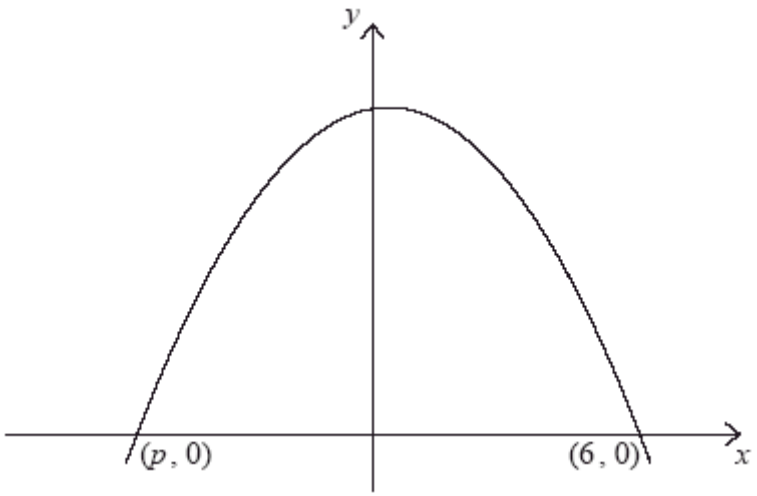
(2)

(c) Write down the range of $f(x)$.

(2)

(Total 6 marks)

3. The diagram below shows the graph of a quadratic function. The graph passes through the points (6, 0) and (p, 0). The maximum point has coordinates (0.5, 30.25).



(a) Calculate the value of p.

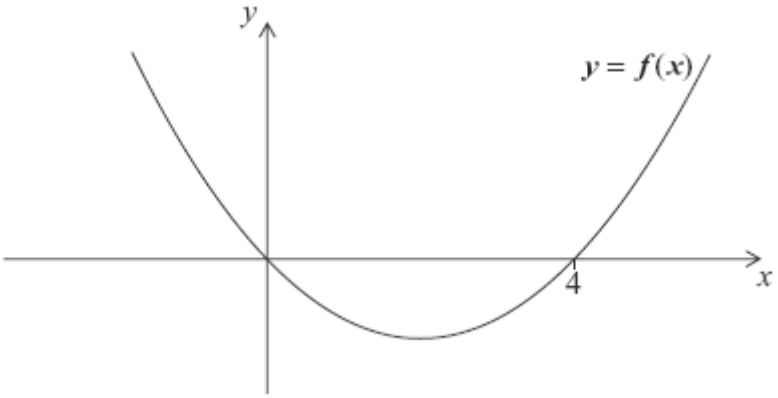
(2)

(b) Given that the quadratic function has an equation $y = -x^2 + bx + c$ where $b, c \in \mathbb{Z}$, find b and c.

(4)

(Total 6 marks)

4. The following is the graph of the quadratic function $y = f(x)$.



(a) Write down the solutions to the equation $f(x) = 0$.

(2)

(b) Write down the equation of the axis of symmetry of the graph of $f(x)$.

(2)

(c) The equation $f(x) = 12$ has two solutions. One of these solutions is $x = 6$. Use the symmetry of the graph to find the other solution.

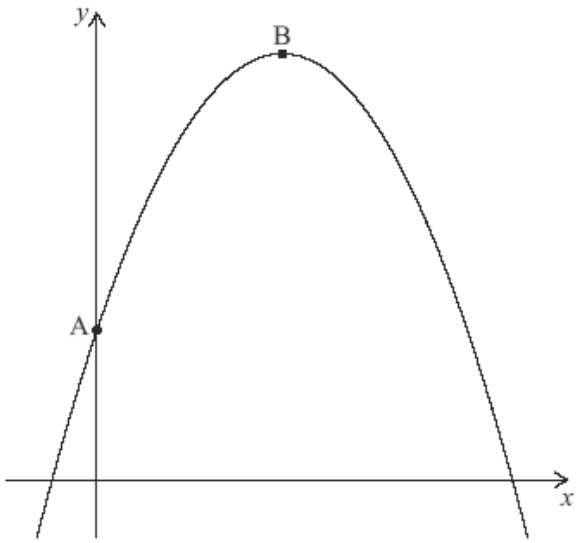
(1)

(d) The minimum value for y is –4. Write down the range of $f(x)$.

(1)

(Total 6 marks)

5. The graph of the quadratic function $f(x) = 3 + 4x - x^2$ intersects the y-axis at point A and has its vertex at point B.



(a) Find the coordinates of B.

(3)

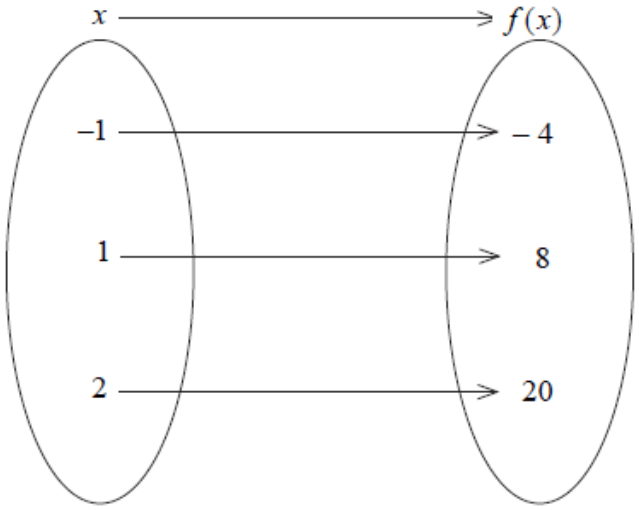
Another point, C, which lies on the graph of $y = f(x)$ has the same y-coordinate as A.

(b) (i) Plot and label C on the graph above.

(ii) Find the x-coordinate of C.

(3)
(Total 6 marks)

6. A quadratic function, $f(x) = ax^2 + bx$, is represented by the mapping diagram below.



(a) Use the mapping diagram to write down **two** equations in terms of a and b.

(2)

(b) Find the value of

(i) a;

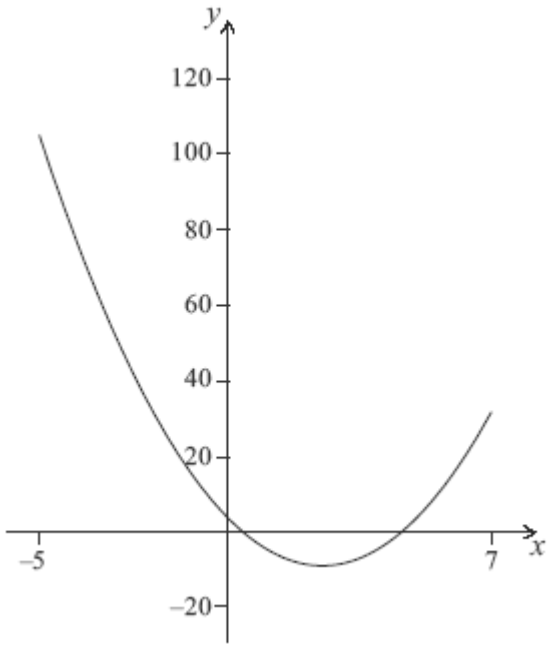
(ii) b.

(2)

(c) Calculate the x-coordinate of the vertex of the graph of $f(x)$.

(2)
(Total 6 marks)

7. The graph of $y = 2x^2 - rx + q$ is shown for $-5 \leq x \leq 7$.



The graph cuts the y-axis at (0, 4).

(a) Write down the value of q.

(1)

The axis of symmetry is $x = 2.5$.

(b) Find the value of r.

(2)

(c) Write down the minimum value of y.

(1)

(d) Write down the range of y.

(2)
(Total 6 marks)