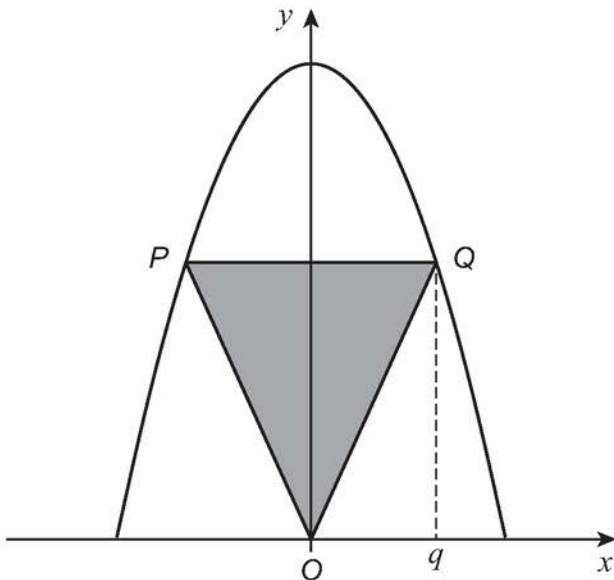


7

The curve $y = 15 - x^2$ and the isosceles triangle OPQ are shown on the diagram below.



Vertices P and Q lie on the curve such that Q lies vertically above some point $(q, 0)$

The line PQ is parallel to the x -axis.

7 (a) Show that the area, A , of the triangle OPQ is given by

$$A = 15q - q^3 \quad \text{for } 0 < q < c$$

where c is a constant to be found.

[3 marks]

7 (b) Find the exact maximum area of triangle OPQ .

Fully justify your answer.

[6 marks]