

**HIGHER TIER
MINI PRACTICE EXAM 6**

**CALCULATOR ALLOWED
20 MINUTES ALLOWED**

1.
A circle has equation $x^2 + y^2 = 81$.

(a) Write down the co-ordinates of the centre of the circle.

(1)

(b) Write down the length of the radius of the circle.

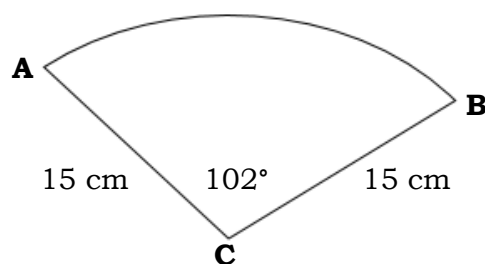
(1)

2.
Make Q the subject of the equation

$$\sqrt{\frac{3Q + M}{T}} = X$$

(3)

3.
ABC is a sector of a circle.



(a) Find the area of the sector ABC. Give your answer to 3 significant figures.

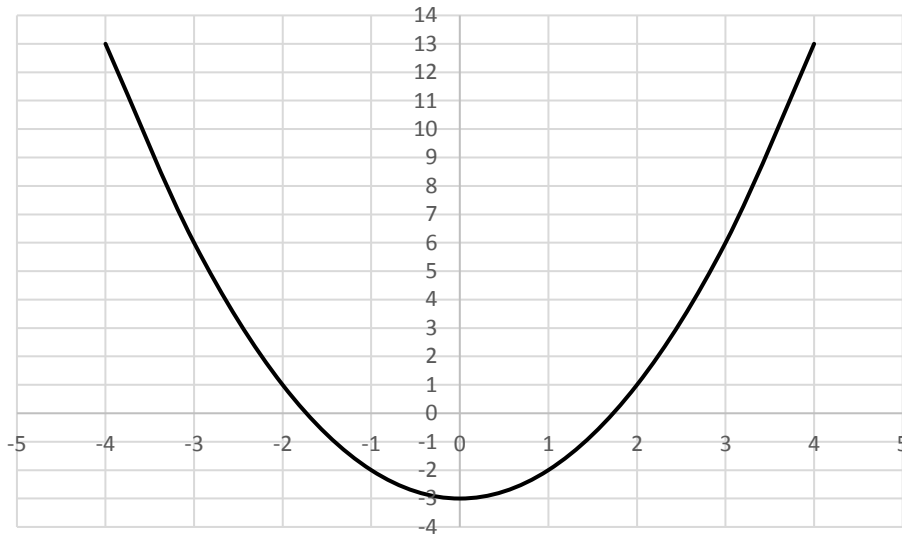
(2)

(b) Find the perimeter of the sector ABC. Give your answer to 3 significant figures.

(2)

4.

Below is the graph $y = x^2 - 3$.



(a) Use the graph to estimate the solutions of $x^2 - 3 = 0$.

(1)

(b) Use the graph to estimate the solutions of $x^2 = 6$.

(2)

(c) By drawing an appropriate straight line, estimate the solutions of $x^2 - 3x - 1 = 0$.

(4)

5.

The maximum capacity of a bridge is 11,500 tonnes, to the nearest 100 tonnes.

The average mass of a car is 2 tonnes, to the nearest tonne.

Mark says “The bridge can hold 7,800 cars at a time”.

Using an error interval, show that Mark is definitely incorrect.

(4)