Topic : Circles and Radians

Figure 4

Figure 4 shows a sketch of the circle C with centre Q and equation

$$x^2 + y^2 - 6x + 2y + 5 = 0$$

(a) Find

(i) the coordinates of Q,
(ii) the exact value of the radius of C.

(5)

The tangents to C from the point T (8, 4) meet C at the points M and N, as shown in Figure 4.

(b) Show that the obtuse angle MQN is 2.498 radians to 3 decimal places.

(5)

The region R, shown shaded in Figure 4, is bounded by the tangent TN, the minor arc NM, and the tangent MT.

(c) Find the area of region R.

(5)

(Total for question = 15 marks)