QUESTION 7   (8 marks)

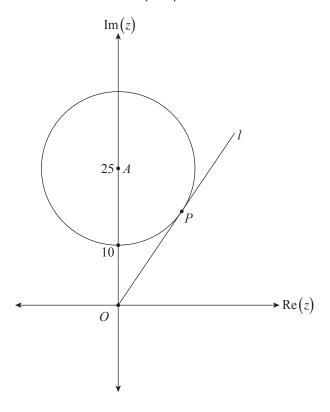Figure 4 shows a circle with centre A in the complex plane.

Figure 4

(a) Write down an equation, in terms of z, that describes exactly all points on the circumference of the circle in Figure 4.

(2 marks)

(b) The line l through the origin O is tangent to the circle at the point P.

The point P represents the complex number w.

(i) Show that $|w| = 20$.

(2 marks)

(ii) Show that $\arg w = \angle OAP$.

(2 marks)

(iii) Hence write w in the form $a + b\mathrm{i}$.

(2 marks)

PLEASE TURN OVER