



The diagram shows a circle with centre  $O$  and radius  $8\text{ cm}$ . Points  $A$  and  $B$  lie on the circle. The tangents at  $A$  and  $B$  meet at the point  $T$ , and  $AT = BT = 15\text{ cm}$ .

- (i) Show that angle  $AOB$  is  $2.16$  radians, correct to 3 significant figures. [3]
- (ii) Find the perimeter of the shaded region. [2]
- (iii) Find the area of the shaded region. [3]