

9.

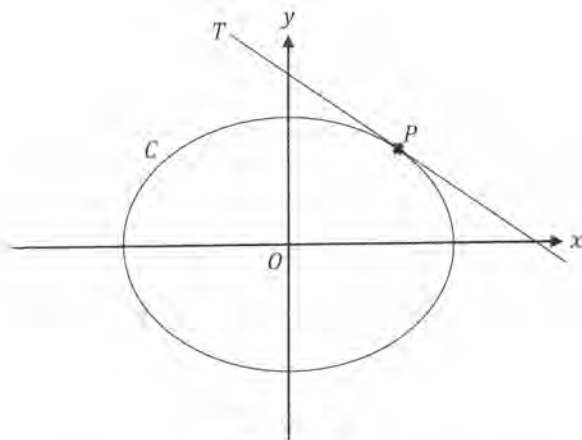


Figure 2

Figure 2 shows the curve C with parametric equations,

$$x = 2 \cos \theta, y = 4 \sin \theta, \quad 0 \leq \theta \leq 2\pi$$

The point P lies on C where $\theta = \alpha$, where $0 < \theta < \frac{\pi}{2}$.

The line T is a tangent to C at P .

- (a) Find the equation of the tangent at P in the form $ax + by = c$, where a and b are functions in α , and c is an integer constant.

(6)

The tangent meets the coordinate axes at the points A and B .

The area of the triangle OAB , where O is the origin, is less than 16 square units.

- (b) Find the range of the possible values of α .

(7)