

6 The curve C is defined, for $0 \leq t < 2\pi$, by the parametric equations

$$x = 4k + k \sin t, \quad y = 2 + 4 \cos t,$$

where k is a constant.

(a) Find a cartesian equation for C . You do **not** need to simplify your answer. **[2]**

You are given that C is a circle.

(b) (i) Determine the radius of C . **[2]**

(ii) Find the possible coordinates for the centre of C . **[2]**