THE GC SCHOOL OF CAREERS

DEPARTMENT OF MATHEMATICS

EXTRA PRACTICE

CORE MATHEMATICS 4

COORDINATE GEOMETRY

EXERCISES

- **1.** Find the cartesian equation of the curve given by $x = t^{\frac{3}{2}}$, $y = 4t^{3}$.
- 2. A curve has parametric equations $x = 3\cos t$, $y = \cos 2t$, $0 \le t \le \pi$. (a) Find the cartesian equation of the curve.

The curve cuts the x-axis at (a,0) and (b,0)(b) Find the exact values of a and b.

- **3.** The curve with parametric equations x = 4t, $y = \frac{4}{t}$, $t \neq 0$ meets the curve $2y^2 + x = 0$ at *P*. Find the coordinates of the point *P*.
- **4.** The diagram shows a sketch of the curve with parametric equations $x = t^2$, y = t(2-t), $t \ge 0$.

The curve meets the *x*-axis at x = 0 and x = 4. The shaded region *R* is bounded by the curve and the *x*-axis. Find the exact area of *R*.

5. A circle has parametric equations $x = \cos \theta - 5$, $y = \sin \theta + 3$, $0 \le \theta \le 2\pi$. Find the cartesian equation and hence draw a sketch of the circle.

R

ANSWERS

1. $y = 4x^2$

2. (a)
$$y = \frac{2x^2}{9} - 1$$
 (b) $a = \frac{3\sqrt{2}}{2}$, $b = -\frac{3\sqrt{2}}{2}$

- **3.** (-8,-2)
- 4. $\frac{8}{3}$
- 5. $(x+5)^2 + (y-3)^2 = 1$, Centre (-5,3) and Radius = 1