THE GC SCHOOL OF CAREERS

DEPARTMENT OF MATHEMATICS

REVISION GUIDE

CORE MATHEMATICS 4

COORDINATE GEOMETRY

Key Points

1. **Cartesian equation**

   To find the cartesian equation of a curve, use the parametric pair of equations and try to eliminate the parameter (usually *t* or θ).

   Method 1: If the parametric equations are not trigonometric rearrange one of them and use the substitution method.

   Method 2: If the parametric equations are trigonometric then choose the appropriate trigonometric formula and substitute both parametric equations there. (PRACTICE)

2. **Using the parametric equations to find:**

   - ***x*- intercept** ($y = 0$)
     Substitute $y = 0$ into the parametric equation containing *y* and find the value(s) of *t*. Substitute the value(s) of *t* into the parametric equation containing *x* to find the *x*-coordinate.

   - ***y*-intercept** ($x = 0$)
     Substitute $x = 0$ into the parametric equation containing *x* and find the value(s) of *t*. Substitute the value(s) of *t* into the parametric equation containing *y* to find the *y*-coordinate.

   - **Point(s) of intersection with a line**
     Substitute the parametric equations into the line to create an equation containing *t* only. Solve to find the value(s) *t*. Then substitute the value(s) into both parametric equations to find the *x* and *y* coordinates of the point(s) of intersection.

3. **Area under the curve**

   - Using the Cartesian equation $\int_{x1}^{x2} (y)\, dx$
   - Using the parametric equations $\int_{t1}^{t2} \left(y \cdot \frac{dx}{dt} \right) dx$