## **Edexcel A level Maths Parametric equations**



## **Topic assessment**

A curve is defined by the parametric equations $x = 2t^2$ , $y = 4t$ .	
<ul><li>(i) By eliminating the parameter, find the cartesian equation of the curve.</li><li>(ii) Find the equation of the tangent to the curve at the point A with</li></ul>	[3]
parameter $t = 2$ .	[4]
(iii) Show that the tangent does not meets the curve again. $(1)$	[3]
(iv) The normal of the curve at A cuts the curve again at B. $\mathbf{E} = \mathbf{E} \mathbf{E} \mathbf{E}$	r <i>e</i> 1
Find the coordinates of B.	[5]
Find the turning points of the curve with parametric equations $x = 3t$ , $y = 12t - t^3$	
and distinguish between them.	[6]
C	
A circle is defined by the parametric equations $x = 1 + 2\cos\theta$ , $y = 3 + 2\sin\theta$ .	
(i) Sketch the circle.	[2]
(ii) Find $\frac{dy}{dt}$ at the point with parameter $\theta$ .	[3]
(iii) Find the equation of the tangent at the point with parameter $A$	[3]
(iii) This the equation of the tangent at the point with parameter $\sigma$ .	[3]
(iv) Find the coordinates of the point where $\theta = \frac{\pi}{3}$ .	[2]
(v) Find the equation of the normal at the point where $\theta = \frac{\pi}{3}$ .	[4]
A line is defined by the parametric equations $x = \cos 2t$ , $y = \sin^2 t$	
(i) Eind dy	[2]
(1) Find $\frac{dx}{dx}$ .	[3]
(ii) Find the cartesian equation of the line.	[3]
The diagram below shows the curve given by the parametric equations	
$x = 2\sqrt{t}, y = t^2 - 3t + 2$ .	
A B C	
	A curve is defined by the parametric equations $x = 2t^2$ , $y = 4t$ . (i) By eliminating the parameter, find the cartesian equation of the curve. (ii) Find the equation of the tangent to the curve at the point A with parameter $t = 2$ . (iii) Show that the tangent does not meets the curve again. (iv) The normal of the curve at A cuts the curve again at B. Find the coordinates of B. Find the turning points of the curve with parametric equations $x = 3t$ , $y = 12t - t^3$ and distinguish between them. A circle is defined by the parametric equations $x = 1 + 2\cos\theta$ , $y = 3 + 2\sin\theta$ . (i) Sketch the circle. (ii) Find $\frac{dy}{dx}$ at the point with parameter $\theta$ . (iii) Find the equation of the tangent at the point with parameter $\theta$ . (iv) Find the coordinates of the point where $\theta = \frac{\pi}{3}$ . (v) Find the equation of the normal at the point where $\theta = \frac{\pi}{3}$ . A line is defined by the parametric equations $x = \cos 2t$ , $y = \sin^2 t$ (i) Find $\frac{dy}{dx}$ . (ii) Find the cartesian equation of the line. The diagram below shows the curve given by the parametric equations $x = 2\sqrt{t}$ , $y = t^2 - 3t + 2$ . A $y$ $y = \sqrt{t^2 - 3t + 2}$ .

- (i) Find the coordinates of the points A, B and C. [3] [6]
- (ii) Find the shaded area.

Total 50 marks

