

Math 232 Worksheet 15 - Parametric Curves

1. Find an equation of the tangent line to the curve at the point corresponding to $t = 1$.

$$\begin{cases} x = t^2 \\ y = t^3 - t \end{cases}$$

2. Find the area enclosed by the curve (an ellipse)

$$\begin{cases} x = 3 \cos \theta \\ y = 2 \sin \theta \end{cases} \quad \text{where } 0 \leq \theta \leq 2\pi.$$

3. Find the exact length of the curve

$$\begin{cases} x = 3t^2 \\ y = t^3 - 3t \end{cases} \quad \text{where } 0 \leq t \leq 1.$$

Answer Keys:

1. $y = x - 1$ 2. 6π 3. 4