Time: 20 minutes   Marks: _____/9

Name: _____

ID #: _____   Serial #: _____

1. For the parametric curve $x = t^2$, $y = t^3 - 3t$, find $\dfrac{d^2 y}{dx^2}$. Where is this curve concave upward?

2. Find length of the curve $r = 2 - 2\cos c$.

3. Set up integral (do not evaluate it) to find area of the surface generated by revolving $x = r\cos t, y = r\sin t \ (0 \le t \le \pi)$ about the $x - axis$.

Time: 20 minutes   Marks: _____/9

Name: _____

ID #: _____   Serial #: _____

1. Describe the motion of the particle with position (x, y) where $x = 2 + \cos t$, $y = 3 + \sin t$ and $0 \le t \le 2\pi$.

2. Test the curve $r = 2\cos 2\theta$ for symmetry about $x - axis$, $y - axis$ and the origin.

3. Calculate length of the curve: $x = e^t \sin t$, $y = e^t \cos t$ $\left(0 \le t \le \pi \right)$