

King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Math 201 Section#: Serial #: Quiz I(a) (Term 181)

Name : ID #..... Marks/6

1. For the parametric curve $x = t^3 - 12t$, $y = t^2 - 7$, find $\frac{d^2y}{dx^2}$. For what values of t , the curve is concave upward?

2. Test the function $\gamma = 5 \cos 3\theta$ for symmetry and draw its graph by selecting a suitable scale.

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Math 201 Section#: Serial #: Quiz I(d) (Term 181)

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1. Find area of the surface obtained by rotating the parametric curve

$$C : x = 3 \cos t, y = 3 \sin t, 0 \leq t \leq \frac{\pi}{3}$$

about the x -axis.

2. Sketch the polar curve: $r^2 = 4 \cos \theta$.

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Math 201 Section#: Serial #: Quiz I(c) (Term 181)

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1. Find length of the parametric curve C :

$$x = \cos t + t \sin t, y = \sin t - t \cos t, \frac{-\pi}{2} \leq t \leq \frac{\pi}{2}.$$

2. Find slope of the tangent line to the cardioid $r = 1 + \sin \theta$ at $\theta = \frac{\pi}{3}$.

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Math 201 Section#: Serial #: Quiz I(b) (Term 181)

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1. For the parametric curve $x = t^2$, $y = t^3 - 3t$, show that there are two tangents at the point $(3, 0)$ and find their equations.

2. Identify the curve $(x^2 + y^2)^3 = 4x^2y^2$ by finding its polar equation. Make a rough sketch of this curve (**Do not include details**).