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

Math-201 Semester-163 QUIZ I

NAME: S.No. ID:

Maximum Marks: 10 Section:07 Time Allowed: 35 minutes

(1) Convert the parametric equations $x = t + \frac{1}{t}$, $y = t - \frac{1}{t}$, $t > 0$ into cartesian equation and identify the curve.

(2) Sketch the region defined by the inequalities $1 \leq |r| \leq 2$ and $0 \leq \theta \leq \frac{\pi}{2}$.

(3) Consider the parametric equations: $x = \cos(\theta)$, $y = \cos(3\theta)$.

(a) Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$.

(b) Find the points on the curve where tangent is horizontal or vertical.

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