

King Fahd University of Petroleum & minerals
Faculty of Science
Mathematical Sciences
MATH 201 Quiz # 1

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Name:

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1) Sketch the graph of the following polar equations

a) $r = 2 + 3\cos\theta$

b) $r = 2\cos 3\theta$

2) Express the equation $x^2 + y^2 = 4x$ in polar form

3) Identify the curve of $r = -2\cos\theta$ by transforming to rectangular coordinates

Find the area of the region inside $r = 5\sin\theta$ & outside $r = 2 + \sin\theta$

4) Find the area of the region enclosed by $r^2 = 4 \cos 2\theta$ (set the integral do not evaluate).

5) Find the arc length of the curve $x = 2 + \sin \theta$ & $y = 3 - \cos \theta$ where $0 \leq \theta \leq \frac{\pi}{2}$

6) Find the polar coordinates of all points which the polar has horizontal or vertical tangent
If $x = 1 - 2 \sin t$ & $y = t + 2 \cos t$, $0 \leq t \leq \pi$

7) Find the equation of tangent line to the curve $x = e^t$ & $y = e^{-t}$, also, find $\frac{d^2y}{dx^2}$ at $t = 1$