

King Fahd University of Petroleum and Minerals
Department of Mathematical Sciences
MATH 201, Sections 8 and 11(041)
Quiz -1

Time: 15 Minutes

Marks: 9

Instructor : Dr. Abdul Rahim Khan

Version (a)

Let $r=2+2 \cos\theta$. Find

- (i) Arc length of this curve
- (ii) Points on the graph of this curve where the tangent line is horizontal.

Version (b)

Draw the graph of $r = 5 \cos 3\theta$

(Show the complete procedure)

Is this graph symmetric about the y -axis?

Version (c)

Let $r = 1-\cos\theta$

Identify on the graph of this curve:

- (i) the highest and lowest point.
- (ii) points at which tangent line is vertical.

Version (d)

Find the area of surface generated by revolving the curve

$$x = 4\sqrt{t}, y = \frac{t^2}{2} + \frac{1}{t} (1 \leq t \leq 4)$$

about the y -axis.

Version (e)

Identify the sketch the polar curve $r=6 \sin^2 (\theta/2)$.

(Hint: Use a double angle formula)