Math 2472 Test 5 TH

Name_____

1. Find a Cartesian equation of the curve: $x(t) = \sqrt{t}$, $y(t) = 1 - t$

2. Find an equation of the tangent to the curve at the point corresponding to the given value of the parameter: $x(t) = t\cos(t)$, $y(t) = t\sin(t)$, $t = \pi$

3. Find the area under the curve for the values $\frac{\pi}{6} \le \vartheta \le \frac{5\pi}{6}$: $x(\vartheta) = 3(\vartheta - \sin(\vartheta))$, $y(\vartheta) = 3(1 - \cos(\vartheta))$

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4. Find the length of the curve for the values of the parameter t: $x(t) = \sin(t)$, $y(t) = \cos(t)$

$$\frac{\pi}{4} \le t \le \frac{3\pi}{4}$$

5. Find the surface area for the curve for the given values of the parameter. The curve is

$$x(t) = \cos t)$$

revolved around the x-axis. $y(t) = \sin(t)$

$$\frac{\pi}{6} \le t \le \frac{\pi}{3}$$

6. Find cartesian coordinates for the point P whose polar coordinates are $(-\sqrt{2}, \frac{-3\pi}{4})$

7. Find the 2 different polar coordinates for the point P whose Cartesian coordinates are $(-1, \sqrt{3})$

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8. Find the slope of the tangent line to the given polar curve at the point specified by the value of ϑ.

$$r(\vartheta) = \cos(2\vartheta)$$

$$\vartheta = \frac{\pi}{4}$$

9. Find the area of the region under the curve from $\frac{\pi}{6} \le \vartheta \le \pi$ $r(\theta) = 1 - \sin(\theta)$

10. Find the length of the polar curve for $0 \le \vartheta \le \frac{3\pi}{4}$. $r(\vartheta) = 2\cos(\vartheta)$

11. Find a polar equation r for the conic with its focus at the pole. (For convenience, the equation for the directrix is given in rectangular form.)

Conic	**Eccentricity**	**Directrix**
Hyperbola	$e = 6$	$x = 2$

12. Find a polar equation r for the conic with its focus at the pole. (For convenience, the equation for the directrix is given in rectangular form.)

Conic	**Eccentricity**	**Directrix**
Ellipse	$e = .7$	$y = 5$

13. Find a polar equation r for the conic with its focus at the pole. (For convenience, the equation for the directrix is given in rectangular form.)

Conic	**Eccentricity**	**Directrix**
Parabola	$e = 1$	$x = -8$