MATH 162 EXAM 3, Fall 2021

	Name:	Score	
1.	Eliminate the parameter and find the Cartesian equation:	1	
	a) $x = \sin t,\ \ y = 4 - \cos t.$	2	
		3	
		4	
		5	
	Ans:_____.	6	
2.	Let $x = t^3 - 6t^2$, and $y = t^2 - 4t$. Find:	7	
	a) dy/dx.	8	
		9	
		10	
		Tot	
	Ans:_____.		
3.	Find the exact arc length of the curve $x = 1 + 3t^2,\ \ y = 4 + 2t^3;\ \ 0 \le t \le 1.$		
	a) Set up the integral.		
	Ans:_____.		
4.	Change from polar to Cartesian coordinates:		
	a) The point $P(\sqrt{2}, \pi/4)$.		
	Ans:_____.		
5.	Find the arc length of the curve $r = 4(1 - \cos\theta)$.		
	a) Set up the integral		
	Ans:_____.		
	Extra Space		

$x = t^2,\ \ y = t^3.$

Ans:_____.

b) The points where the tangent is horizontal.

Ans:_____.

b) Compute the integral.

Ans:_____.

b) The equation $r = 4\sec\theta$.

Ans:_____.

b) Compute the integral

Ans:_____.

	Name:
6.	Find the center, vertices and foci of the conic: $9x^2 + 4y^2 - 18x = 27$. Vertices_____ Center_____. Foci _____.
7.	Given the conic $r = 8/(4 + \sin\theta)$: a) Find the eccentricity and the directrix. Eccentricity:_____ Directrix_____. b) Find the coordinates of vertices and foci. Vertices:_____ Foci:_____.
8.	Determine whether the sequence converges or diverges. If it converges, find the limit. $a_n = n^2 e^{-n}$. Ans:_____. b) $a_n = \ln(n+1) - \ln n$. Ans:_____.
9.	Find the sum of the following series: a) $s = 4 - 3 + \frac{9}{4} - \frac{27}{16} \ldots$ $\sum_{n=1}^{\infty} 3\frac{(-2)^{n+1}}{5^n}$. Ans:_____.
10.	Use the integral test to determine whether the series is convergent or divergent. $\sum_{n=1}^{\infty} ne^{-n^2}$. Ans:_____.
	Extra Space