0014 D 11 NC 14 D		Dept. or School		Year	proct	or
2014 Fall Midterm Exam	ı	Student ID		Name	,	
** Your answer must be provided with descriptions how 1. Let the three points be $A(1,1,1)$, $B(1,1,1)$ (1) (3 points) Find the value of t so that the f and $D(t,t^2,t^3)$ lie in the same plane.	2), C(3,-1,2).	the two p	ints) Find parametroplanes $3x - 6y - 2$			
(2) (3 points) Find the volume of the tetraher are A, B, C , and $D(1,2,3)$ (Hint. A tetra with four points A, B, C , and D , and four trial	hedron is a solic	(2)(3 point line l .	nts) Find the dist	ance from	the point S(1	2,3) to the



3.(7 points) The point $(1,\frac{\pi}{2},\frac{2}{3}\pi)$ is given in spherical coordinates. Find an equation in spherical coordinates for the largest sphere that passes through the point $(4,\frac{\pi}{2},\frac{2}{3}\pi)$ and is such that each of the points (ρ,θ,ϕ) inside the sphere satisfies the condition $\rho^2 < 40 + 2\rho[\sin\phi(\cos\theta + \sqrt{3}\sin\theta) - \cos\phi]$

4.(7 points) Let C be the curve of intersection of the plane $y = \sqrt{3}z$ and the cylinder $x^2 + 4z^2 = 4$.

Find parametric equations for the tangent line to the curve C at the point (-2,0,0).

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CALCULUS II	Dept. or School		Year	proctor					
2014 Fall Midterm Exam	Student ID	· .	Name						
5.(7 points) The parabola $z = 4y^2$, $x = 0$ is rotated about the z-axis. 6. Let a surface S be given by $z = f(x,y)$ where									
Find an equation of the resulting surface in spherical	f(x,y) = 0	$x(y^2+x^2)^{-\frac{3}{2}}e^{\sin((x-x^2))}$	$(-1)^2y$.						

coordinates.

(2)(4 points) Using the linearization L(x,y) at (1,0), approximate the value of f(1.01, -0.03).

(1)(3 points) Find a tangent plane of S at (1,0,1).