MATH 550	V 0 9		1/2	
	Spring, 2008	Quiz #7	Name:_	M

1. Compute $\iint_S \mathbf{F} \cdot d\mathbf{S}$ for $\mathbf{F} = (9xy^2, x^2y, z)$ for S the closed cylinder, oriented by outward normals and bounded by $\mathbf{F} = (9xy^2, x^2y, z)$
$x^2 + y^2 = 4$ , $z = -2$ , and $z = 3$
SF. JS = SS J. FUV D= interior 2/S
JI 03 = JJ V- F 00 D- 1110 10 93
S 1 D
Causs 2 1
CC CC 2 2 1) 21/- [ [ 19/8/nD+
00-2 r2000+1)
= 5/(8/sin0+r+r) drde derdrde
- [(Brénd+r+r) drde dz rdrde
= 5/ (8/8/0+1+1)0100 42/0100
= 5 5 TT (328500+4+2) dD (#4 inside D)
= 5 1 (328) 0 + 4 + W) W [ FT MSICED
27
$= 5(6)(2\pi) + (5)(32)(20 - \frac{\cos 20}{4}) = 5(6)(2\pi) + (5)(32)(20 - \frac{\cos 20}{4}) = \frac{\cos 20}{4}$
$= C/(3/2\pi) + (5/32)(30$
4 110
$=(a_1)(a_2)$
=(5)(12)(7) + 5(32)(7)
= 220 or (no quarantee of arthmetic
2. (5 points) A small sphere & of redirections
2. (5 points) A small sphere $S_a$ of radius $a$ is inside a larger sphere $S_b$ of radius
b; the centers may not be at the same point however. Suppose $\nabla \cdot \mathbf{F} = 0$ throughout the region D between the two spheres. How are the integrals
JS and ond (a I . Hb (b) Telated it is and to represent the t
normals to each sphere? Briefly explain.
Blut.
in in the metan explane
io no on the outer sphere,
but - na on the ment sphere (this)
2003 2 20 31
0=SSF.F. V=SSF. Pout 48
Joseph Jones
D =0 0D
= SF. nos + SF. (-na) ds pull (-) out
= JF. Oh US + JF. (-) out
5,
2 603
1hines (C= 1) - (P= 1)
Hence SSF. hads = SSF. hads
So Si
~a -5