CALCULUS 3

Q104 HW LIST

LESSON1:

Section 15.6: (SET UP ONLY) 11 – 21 odd, 33

LESSON2:

Section 15.7: (SET UP ONLY) 17, 19, 21, 23(a)

Section 15.8: (SET UP ONLY) 21, 23, 25, 29(a)

PROVE: $|J| = r$ for the cylindrical coordinate transformation

PROVE: $|J| = \rho^2 \sin\phi$ for the spherical coordinate transformation

LESSON3 (REVIEW):

1. A solid Q is bounded by the cone $z = \sqrt{x^2 + y^2}$ and the plane $z = 2$. The density $f(x, y, z)$ is directly proportional to the square distance from the origin to P. Find the mass of Q.

A. Set up and **solve** using cylindrical coordinates.
B. Set up and **solve** using spherical coordinates.

2. Section 15.8 #24 (Requires Integration by Parts)

3. Section 15.6 #21
Notes:
Without a cylindrical coordinates transformation: Requires a Trigonometric Substitution
With a cylindrical coordinates transformation: Nothing Special Required

4. Section 15.7 #19 (Nothing Special)
5. Section 15.7 #21 (Requires $\int_0^{2\pi} \cos^2 x dx = \pi$)

6. Section 15.8 #35 (Must find ϕ)

7. Section 15.6 #13
Notes: Requires Integration By Parts for (dzdydx)