

**Assignment #12 – MATH 2421**  
Summer 2008

Harder

Name: \_\_\_\_\_

- Due on Monday, 14 July 2008 at 10:30 a.m.
- Attach this cover sheet to this assignment.
- Copy all of your work onto engineering pad paper!
- Give enough details about each problem so that I should NOT need to refer back to the text.

**Section 11.4**

- (I) Complete Problem #5 on p. 960. This is a portion of a right circular cone.
- (II) Complete Problem #18 on p. 960. This is the surface area of a hemisphere. Check it using the geometry formula for surface area.

**Section 11.5**

- (III) Complete Problem #6 on p. 972. The function  $f(x, y, z)$  can be negative in  $Q$ , so it cannot represent a mass density function.
- (IV) Complete Problem #14 on p. 972. After you evaluate the Inner integral  $dz$ , convert the resulting double integral to polar!  
In essence, this is a good lead-in to cylindrical coordinates.
- (V) Complete Problem #30 on p. 972. This solid is bounded below by the elliptic paraboloid and bounded above by the plane.
- (VI) Complete Problems #37 & #40. You may use technology to make the sketches. It is important that you understand how the surfaces bound the solid. Is it possible to change the order of integration to aid your understanding? (#37 is a bit tricky.)

**Section 11.6**

- (VII) Complete Problem #15 on p. 979. The region down in the  $xy$ -plane is an annulus.
- (VIII) Complete Problem #23 on p. 979. This could represent a mass calculation.
- (IX) Complete Problem #32 on p. 979. This requires one of the more interesting polar functions.
- (X) Complete Problems #34 & #35 on p. 980.