

## Project III Cover Sheet

*This page must be stapled in front your project*

<p>This part to be used by grader: <b>No. of correct problems:</b>_____ out of 8 <b>Project Grade</b>_____ out of 10 pts.</p>
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Name: \_\_\_\_\_

### Project Check List:

Answers are boxed ☐

Formulas are boxed ☐

Sketches are provided when required ☐

Project is stapled with cover sheet in front ☐

### Project III

In Project III you will work with:

1. Understanding spherical coordinates.

Sketch the following regions and find their volume using spherical coordinates.

a) The region bounded above by  $x^2 + y^2 + z^2 \leq 4$  and below by  $z = \sqrt{x^2 + y^2}$  (icecream cone).

b) The orange wedge:  $x^2 + y^2 + z^2 \leq 1$ ,  $y \geq 0$ ,  $z \leq 0$ .

2. Understanding the value of cylindrical and spherical coordinates:  
Again, they help simplify certain integrals.

Do: 12.7 # 40, 48

3. Parametrization and line integrals.

Make sure to clearly write a parametrization for the curves in the following problems.

Do: 13.2 # 12, 14

4. Understanding the Fundamental Theorem of Line Integrals and the meaning of conservative vector fields.

Do 13.3 # 16, 34 (Hint: do not use the parametrization, use the Fundamental Theorem of Line Integrals).