

Math 250B X02
Test Three

Time: 50 minutes
Total: 24 marks

Name: _____

1. [4 marks] Set up a triple integral in rectangular coordinates for the volume under $z = 12 - 6x - 3y$ in the first octant.

2. [4 marks] Set up a triple integral in cylindrical coordinates for the volume between the xy -plane and $z = 49 - x^2 - y^2$.

3. [4 marks] Set up a triple integral in spherical coordinates for the volume between $z = \frac{\sqrt{x^2+y^2}}{2}$ and $z = 1$.

4. [6 marks] Find the surface area of the part of the surface $z = 6 + xy$ that lies inside the cylinder $x^2 + y^2 = 4$. Note: You don't need to graph $z = 6 + xy$ in order to solve the problem.

5. [6 marks] Find the work done by the force field $\mathbf{F} = [x + y, x]$ along the straight line segment from $(3, -2)$ to $(6, 7)$.