# Math 2513 – Summer 2024

# Quiz 4

Name: Student ID:

1 – There is a spinning cylinder of compressible fluid. Gravity is giving a density gradient of f(z)=(1-z). Since it is spinning, there is also a density gradient of g(r)=r. The height is 4, and the radius is 1.5. What is the total mass? (3)

2 – Choose the correct answer. (1.5)

1. The volume element in cylindrical coordinates is
   1. dxdydz
   2. drdθdz
   3. rdrdθdz
2. The volume of a cylinder is given by
   1. 2πrh
   2. πr2h
   3. 4/3 πr3
3. For a function, f(x,y), the approximation f(x0,y0) is called the \_\_\_\_\_\_ approximation:
   1. linear
   2. constant
   3. second order

3 – If we have the equation, f(x,y) = 2x – 4y, does the point (1, 2, -6) sit on it? What about the point (-1, 5, 42)? (1.5)