

Math 233 - Quiz 12

May 4, 2023

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due May 9.

1. (5 points) Use a double integral to find the area of the 1st-quadrant region inside both circles $r = 3 \sin \theta$ and $r = \sqrt{3} \cos \theta$.

2. (5 points) Let S be the space region above the xy -plane and under the paraboloid $z = 16 - x^2 - y^2$. Set up the triple integral(s) necessary to compute the average value of $f(x, y, z) = 1 + x^2 + y^2 + z^3$ over S . Use technology to compute the average value.