

Math 233 - Quiz 11

November 30, 2023

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) Use a double integral in polar coordinates to find the area of the region in the xy -plane inside the circle $x^2 + y^2 = 2$, above the line $y = 1$, and below the line $y = \sqrt{3}x$.

2. (3 points) Convert to an equivalent integral in polar coordinates and evaluate.

$$\int_{\sqrt{2}}^2 \int_{\sqrt{4-y^2}}^y dx dy$$

3. (4 points) Set up and evaluate the triple integral that gives the volume of the space region above the plane $z = 0$, below the plane $z = -y$, and inside the cylinder $x^2 + y^2 = 1$.