

1. $\int \int_D e^{-x^2-y^2} dx dy = \pi(1 - e^{-R})$.

2. $\int \int_D \cos(9x^2 + 9y^2) dx dy = \frac{1}{9} \sin(126)\pi$.

3.(a) $V = \frac{233}{12}\pi - \frac{21}{4}\pi\sqrt{6}$

3.(b) $V = 4\pi$

4 $V = \pi/3 * 10^3 \text{cm}^3$

5. $m = \frac{25499}{6}\pi$

6. $V = (36\pi - 8\pi\sqrt{5} - 18 + \frac{22}{3}\sqrt{5})\text{cm}^3$