

Quiz 5

May 29, 2014

Show all details.

1. Evaluate $\int_{-1}^0 \int_{-\sqrt{1-x^2}}^0 \frac{2}{1 + \sqrt{x^2 + y^2}} dy dx$
2. Evaluate $\int_0^4 \int_0^1 \int_{2y}^2 \frac{2 \cos(x^2)}{\sqrt{z}} dx dy dz$
3. Express the volume of $D = \{(x, y, z), x^2 + y^2 < 1, 0 < z < \sqrt{4 - x^2 - y^2}\}$ as a triple integral in cylindrical and spherical coordinates, respectively. Need not evaluate them.
4. Evaluate $\int_1^2 \int_{1/y}^y \sqrt{\frac{y}{x}} e^{\sqrt{xy}} dx dy$
5. Let $\mathbf{F}(x, y) = (y, x)$ and $C = \{(x, y), \frac{x^2}{4} + y^2 = 1\}$. Evaluate $\int_C \mathbf{F} \cdot \mathbf{T} ds$ and $\int_C \mathbf{F} \cdot \mathbf{n} ds$ where \mathbf{T} is the counter-clockwise unit tangent and \mathbf{n} the outward unit normal on C .

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