

PROBLEMS | JACOBIAN

REFATH BARI

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NICE

1	<p>CONVERT THE AREA OF A CIRCLE FROM POLAR TO RECTANGULAR, WHERE</p> <p>Area of circle $A =$</p> $\int \int_A dx dy$ <p>$x = \rho \cos \theta$ and $y = \rho \sin \theta$</p>
2	<p>IN SPHERICAL COORDINATES, WE HAVE:</p> $\begin{aligned}x &= r \sin \theta \cos \phi \\y &= r \sin \theta \sin \phi \\z &= r \cos \theta\end{aligned}$ <p>FIND THE TRANSFORMATION OF VOLUME ELEMENTS BETWEEN CARTESIAN AND SPHERICAL POLAR COORDINATE SYSTEMS</p>

GREAT

1	<p>Use the map $G(u, v) = \left(\frac{u}{v+1}, \frac{uv}{v+1} \right)$ to compute</p> $\iint_D (x+y) dx dy,$ <p>where D is the shaded region below:</p>
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