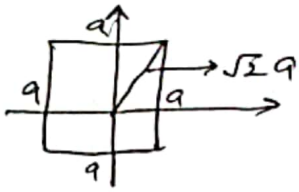
Sem-I | M.P-I | Assignment | B.Sc(H) Physics

Q.① Evaluate $I = \int_{-\infty}^{\infty} e^{-x^2} dx$ in 2-D. by Jacobian.



Q.② If "Area" refers to that under the standard normal curve, find the value of or values of z such that (a) area between 0 and z is 0.3770 (b) area to left of z is 0.8621 (c) area between −1.5 and z is 0.0217.

Q.③ verify Euler's theorem for the expressions.

$(x^{1/2}+y^{1/2})(x^n+y^n)$ and $\frac{1}{x^2+xy+y^2}$

Q.④ Check the divergence theorem for the function

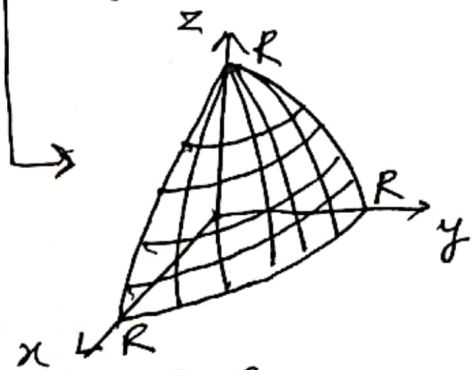
$$\vec{A} = r^2\cos\theta\,\hat{r} + r^2\cos\phi\,\hat{\theta} - r^2\cos\theta\sin\phi\,\hat{\phi}$$

using as your volume one octant of the sphere of radius R.

Q.⑤ Compute the line integral of

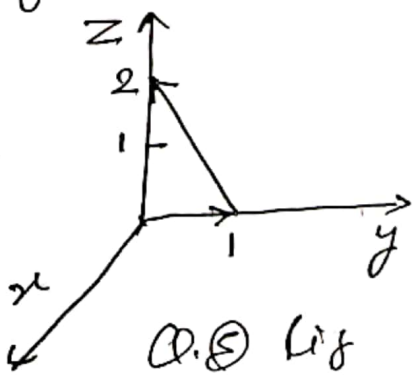
$$\vec{A} = 6\hat{x} + yz^2\hat{y} + (3y+z)\hat{z}$$

along the triangular Path shown in fig. Check your answer using Stokes's theorem.



Q.④ Fig

→ Make sure you include the entire surface.



Q.⑤ Fig

Prepared by

(NIHAL KUMAR)