1. Evaluate the work done by the force **F**(x,y,)=$(x^{3/2} - 3y)$**i**+ $(6x + 5\sqrt{y})$**j** on a particle moving counterclockwise around the closed triangle path C with vertices (0,0), (5,0) and (0,5)	2. Evaluate the line integral along the path $\int_C 2xyzds$ C: **r**(t)=sin t **i**+ cos t**j**+2**k** , $\mathbf{0} \le t \le \frac{\pi}{2}$
3. Evaluate the line integral $\int_C 2xyzds$ along the path C: **r**(t)=sin t **i**+ cos t**j**+2**k** , $\mathbf{0} \le t \le \frac{\pi}{2}$	4. Is the vector field is conservative, **F**(x,y,)=$(x^3 + e^y)$)**i**+ (x$e^y - 6$)**j**, if it is, find its potential function.
5. Use the Green's Theorem to evaluate the line integral $\int_C \cos y\, dx + (xy - xsiny)dy$ with C: boundary of the region lying between the graphs of $y = x$ and $y = \sqrt{x}$.	6. Evaluate the line integral $\int \mathbf{F} \cdot \mathbf{dr}$ of the vector field **F**(x,y,z)=xy **i**+y**j**, C: **r**(t)=4cos t **i**+ 4sin t**j** , $\mathbf{0} \le t \le \frac{\pi}{2}$
7. Evaluate the line integral $\int_C 2\tan^{-1}\frac{y}{x}dx + \ln(x^2 + y^2)\, dy,$ with C: $x = 4 + 2\cos\theta, y = 4 + \sin\theta$	8. Find the Curl of the vector field **F**(x,y,z)=(4xy+z^2) **i**+$(2x^2 + 6yz)$**j**+(2xz)**k**

9. Find the Curl of the vector field **F**(x,y,z)=x^2z**i**-2xz**j**+yz^2**k**, at point(2, -1,3).

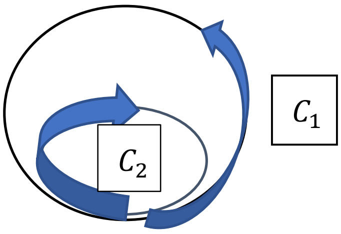
10. Find the divergence of the vector field **F**(x,y,z)=$e^x \sin y$**i**-$e^x \cos y$**j**+x^2**k**, at point (3,0,0).

11. Is the vector field is conservative, **F**(x,y,)=(ln y+2)**i**+ $\frac{x}{y}$**j**, if it is, find its potential function.

12. Let R be the region inside the circle C_1: $x = 5\cos\theta, y = 5\sin\theta,$ (with counterclockwise orientation) and outside the ellipse C_2: $x = 2\cos\theta, y = \sin\theta,$ (with clockwise orientation). Evaluate the line integral

$$\int_C \left(e^{-\frac{x^2}{2}} - y\right) dx + \left(e^{-\frac{y^2}{2}} + x\right) dy \quad \text{where}$$

$C = C_1 + C_2$.



13. Find the area of the surface S: **r**(u,v)=(2u cos v) **i**+(2u sin v)**j**+(u^2)**k** over the region $0 \le u \le 2$, $0 \le v \le 2\pi$.

14. Find a tangent plane to the surface S: **r**(u,v)=u**i**+v**j**+$\sqrt{uv}$**k** at the point (1,1,1).

15. Evaluate the surface integral $\iint_S (y^2 + 2yz)dS$ where S is the first octant portion of the plane $2x + y + 2z = 6$.

16. Evaluate $\iint_S (x^2 + y^2 + z^2)dS$, S: $z = x + y$, $x^2 + y^2 \le 1$.