Math 301-132 Quiz 1

Name:.....Sec#:.....ID#:.....Ser#:.....

Q.1: Find curl and divergence of the vector field $\overrightarrow{F}(x, y, z) = xe^{-z}\hat{i} + 4yz^2\hat{j} + 3ye^{-z}\hat{k}$.

Q.2: Find work done by the force $\overrightarrow{F}(x, y, z) = yz\hat{i} + xz\hat{j} + xy\hat{k}$ acting along the curve $\vec{r}(t) = t^3\hat{i} + t^2\hat{j} + t\hat{k}$ from $t = 1$ to $t = 2$.

Q.3: Determine whether the vector field $\overrightarrow{F}(x,y) = 2xy^3\hat{i} + 3y^2(x^2+1)\hat{j}$ is a conservative field. If so, find a potential function Φ for $\overrightarrow{F}$.