Math 301-161 Quiz 1 (A)

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

Q.1: Find length of the curve defined by $\overrightarrow{r}(t) = e^t \cos 3t\ \hat{\mathbf{i}} + e^t \sin 3t\ \hat{\mathbf{j}} + e^t\ \hat{\mathbf{k}}$ at $0 \leq t \leq 2\pi$.

Q.2: Find the directional derivative of $f(x,y) = \dfrac{2xy}{3x+4y}$ at $(-1,2)$ in the direction of the vector $3\hat{\mathbf{i}} - 4\hat{\mathbf{j}}$

Q.3: Find curl and divergence of the vector field $\overrightarrow{F}(x,y,z) = xye^x\hat{i} - x^3yze^z\hat{j} + xy^2e^y\hat{k}$.