Math 301-103   Quiz 1 (A)

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

Q.1: Find equation of tangent line to the curve $\vec{r}(t) = 3\cos t\,\hat{\mathbf{i}} + 3\sin t\,\hat{\mathbf{j}} + 4t\,\hat{\mathbf{k}}$ at $t = \frac{\pi}{3}$.

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

Q.3: Find the curl and divergence of $\vec{F}(x, y, z) = yz\ln x\,\hat{\mathbf{i}} + (2x - 3yz)\hat{\mathbf{j}} + xy^2z^3\hat{\mathbf{k}}$.