Math 301-132 Quiz 1 (A)

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

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