"QUIZ" for Lecture 4

NAME: (print!) LiuyangShan   **Section:24**

E-MAILSCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q4FirstLast.pdf) ASAP BUT NO LATER THAN Sept. 17, 8:00pm

1. Find a parametric equation for the tangent line to the curve with the given parametric equation at the specified point

$$x = \cos t \quad , \quad y = \sin t \quad , \quad z = t^2 + 1 \quad ; \quad (1, 0, 1)$$

$x' = -\sin t \quad y' = \cos t \quad z' = 2t$

$\begin{cases} \cos t = 1 \\ \sin t = 0 \\ t^2 + 1 = 1 \end{cases} \to t = 0 \to \begin{cases} x' = 0 \\ y' = 1 \\ z' = 2 \end{cases}$

$\text{The tangent line is } f(t) = \begin{cases} 1 \\ t \\ 1 + 2 * t \end{cases}$

2. Find **r**(t) if

$$\mathbf{r}^j(t) = t\,\mathbf{i} + 2\,\mathbf{j} + (t + 1)\,\mathbf{k}$$
$$\mathbf{r}(0) = \mathbf{i} + 2\,\mathbf{j} + 3\,\mathbf{k} \quad .$$

and

$$r(t) = \frac{t^2}{2}\mathbf{i} + 2t\mathbf{j} + \frac{t^2 + 2}{2}\mathbf{k} + c$$

$$r(t) = \frac{t^2 + 2}{2}\mathbf{i} + 2 * (t + 1)\mathbf{j} + \frac{t^2 + 6}{2}\mathbf{k}$$