

"QUIZ" for Lecture 4

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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

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

$$\begin{aligned} x' &= -\sin t \\ y' &= \cos t \\ z' &= 2t + 1 \end{aligned} \quad \begin{aligned} &(x + \sin t) - (y - \cos t) \\ &+ (z - 2t - 1) \end{aligned}$$

2. Find $\mathbf{r}(t)$ if

$$\mathbf{r}'(t) = t\mathbf{i} + 2\mathbf{j} + (t+1)\mathbf{k}$$

and

$$\mathbf{r}(0) = \mathbf{i} + 2\mathbf{j} + 3\mathbf{k}$$

$$\int \mathbf{r}'(t)$$

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

$$\mathbf{r}(0) = \mathbf{c}$$

$$\therefore \mathbf{r}(t) = \left(\frac{t^2}{2} + 1\right)\mathbf{i} + (2t + 2)\mathbf{j} + (t^2 + t + 3)\mathbf{k}$$