"QUIZ" for Lecture 4

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E-MAIL SCANNED .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

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

$r(t) = \langle \cos t, \sin t, t^2+1 \rangle$

$r'(t) = \langle -\sin t, \cos t, 2t \rangle$

$\cos t = 1 \quad \sin t = 0 \quad t^2+1 = 1 \quad t = 0$

$r(0) = \langle 1, 0, 1 \rangle$

$r'(0) = \langle 0, 1, 0 \rangle$

$\langle 1, 0, 1 \rangle + t\langle 0, 1, 0 \rangle$

$= \langle 1, t, 1 \rangle$

$x = 1, \; y = t, \; z = 1 \quad (-\infty < t < \infty)$

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

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

and

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

$r(t) = \int r'(t) = \frac{t^2}{2} i + 2t j + \left(\frac{t^2}{2} + t\right) k + C$

$r(0) = 0 + 0 + 0 + C = 1 + 2j + 3k$

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