"QUIZ" for Lecture 4

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E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZealc3@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

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

Given $r(t) = \langle \cos t, \sin t, t^2+1 \rangle$ find tangent line @ $(1,0,1)$

tangent ⇒ first derivative

$\cos(t) = 1 \Rightarrow t = 0$

$\sin(t) = 0$

$t^2+1 = 1$

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

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

tangent line : point on curve + t(tangent point)

tangent line : $\langle 1,0,1 \rangle + t\langle 0,1,0 \rangle = \langle 1,0,1 \rangle + \langle 0,t,0 \rangle$

2. Find r(t) if

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

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

and

$$r(0) = i + 2j + 3k \quad .$$

$\int r'(t) \cdot r(t) \cdot \langle \frac{1}{2}t^2, 2t, \frac{1}{2}t^2 + t \rangle$

↳ still have to figure out constants

$x(0) = 1 = \frac{1}{2}t^2 + 1$

$y(0) = 2 = 2t + 2$

$z(0) = 3 = \frac{1}{2}t^2 + t + 3$

$r(t) = \langle \frac{1}{2}t^2 + 1, 2t + 2, \frac{1}{2}t^2 + t + 3 \rangle$