"QUIZ" for Lecture 4

NAME: (print!) Daniel Gameiro **Section:** 23

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

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

$x(1) = 0, \quad y(0) = 0, \quad z(1) = 2$

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

$x'(1) = -1, \quad y'(1) = 1, \quad z'(1) = 2$

equation $= \langle 0,0,2 \rangle + t\langle -1,1,2 \rangle = \langle -t, t, 2t+2 \rangle$

$x'(t) = -t, \quad y'(t) = t, \quad z'(t) = 2t+2$

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

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

and

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

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

$0i + 0j + 0k + C = i + 2j + 3k$

$C = i + 2j + 3k$

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