NAME: (print!) Fayed Raza   **Section:** 2st

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q5FirstLast.pdf) ASAP BUT NO LATER THAN Sept. 21, 8:00pm

1, Find the curvature for
$$\mathbf{r}(t) = \sin t\,\mathbf{i} + \cos t\mathbf{j} + t\,\mathbf{k} \quad.$$

$r(t) = \sin t\, i + \cos t\, j + t\, k$

$r'(t) = \cos t\, i - \sin t\, j + k$

$r''(t) = -\sin t\, i - \cos t\, j$

$\left[r'(t) \right] = \sqrt{1}$

$\begin{vmatrix} i & j & k \\ 1 & \sim & j \\ 1 & 1 & 0 \end{vmatrix}$

$\begin{matrix} -1 & j \\ 1 & 0 \end{matrix}$

$\begin{matrix} 1 & 0 \\ 0 & -1 \end{matrix}$

$= \textcircled{1}$

$\sqrt{6}$ $-i - j + 2k$

$\sqrt{1^2 1^2 + 4} = \sqrt{6}$

$\dfrac{\sqrt{6}}{1}$

2.: ==Find the velocity, acceleration, and speed of a particle with the given position function.==
$$\mathbf{r}(t) = t\,\mathbf{i} + t^2\,\mathbf{j} + 5\,\mathbf{k} \quad.$$

Velocity: $r'(t) = i + 2tj$

Speed $= |r'(t)| = i + 2tj$

acceleration: $r''(t) = 2j$