

T, K

osculating plane.

$$N = \frac{T'}{|T'|}$$

$$T \times N = B$$

Binormal

$$r(t) = \langle \cos t, \sin t, t \rangle$$

Find $t=0 \rightarrow (1, 0, 0)$

T, N, B , eq. of osc. plane

at $t=0$ $r' = \langle -\sin t, \cos t, 1 \rangle$

$$T = \frac{1}{\sqrt{2}} \langle -\sin t, \cos t, 1 \rangle \xrightarrow{t=0} \left\langle 0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right\rangle$$

$$\frac{T'}{|T'|} \rightarrow \langle -\cos t, -\sin t, 0 \rangle = N = \langle -1, 0, 0 \rangle$$

$$B = \left\langle 0, \frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right\rangle$$

eq. of osc.

$$\langle x-1, y, z \rangle \cdot \langle 0, -1, 1 \rangle = 0$$

$$z - y = 0$$

$$K = \frac{|r' \times r''|}{|r'|^3} = \frac{\sqrt{2}}{(\sqrt{2})^3} = \frac{1}{2}$$

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

$$r' \times r'' = \langle 0, -1, 1 \rangle$$

$$r'' = \langle -1, 0, 0 \rangle$$

