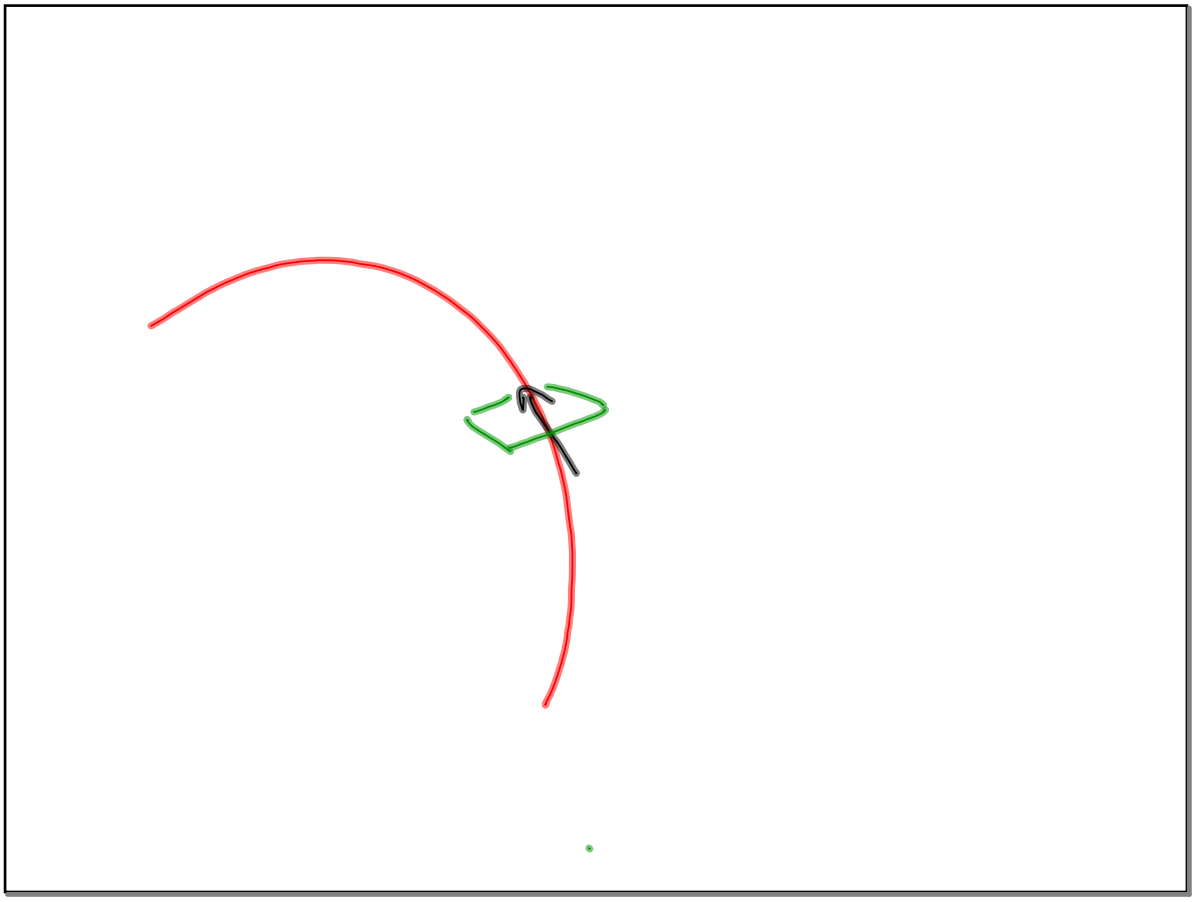


$r(t) = \langle \cos t, \sin t, 1 \rangle$

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

$K = \frac{|T'|}{|r'|} = \frac{1}{1}$

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

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

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

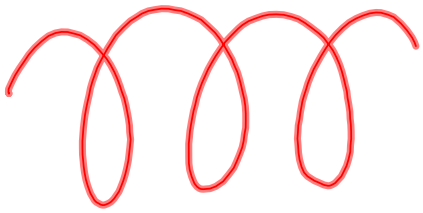
$K = \frac{\frac{1}{\sqrt{2}}}{\sqrt{2}} = \frac{1}{2}$

$N = \frac{T'}{|T'|} = \left\langle \frac{-\cos t}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}}, \frac{-\sin t}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}}, 0 \right\rangle$

$= \langle -\cos t, -\sin t, 0 \rangle$

Circle

spiral



Find an eq. of osculating plane

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

at $t = \frac{\pi}{2}$

$T_{\frac{\pi}{2}} = \left\langle \frac{1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}} \right\rangle$ $T \times N$

$N_{\frac{\pi}{2}} = \langle 0, -1, 0 \rangle$

$r = \langle 0, 1, \frac{\pi}{2} \rangle$