tut2

February 1, 2019 2:28 PM

(x1,y1) -> (xm,ym)
close: xm=x1, y1=ym
smooth: d^nx/dt^n. dy^n/dt^n exists

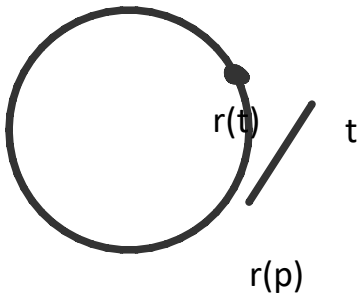
$x^2 + y^2 = 1,$
$let\ angle\ t\ on\ curve, x = cost, y = sint, t \in [0,2\pi], r(t) = (x,y) = (cost, sint)$

tangent, normal

$r(t) = x(t), y(t) = \left(x(0) + \frac{tdx(0)}{dt}, y(0) + \frac{tdy(0)}{dt}\right)$

$r(0) = x(0), y(0))$

now we have 2 points r0 and rt



on y it's right hand , on x is left hand

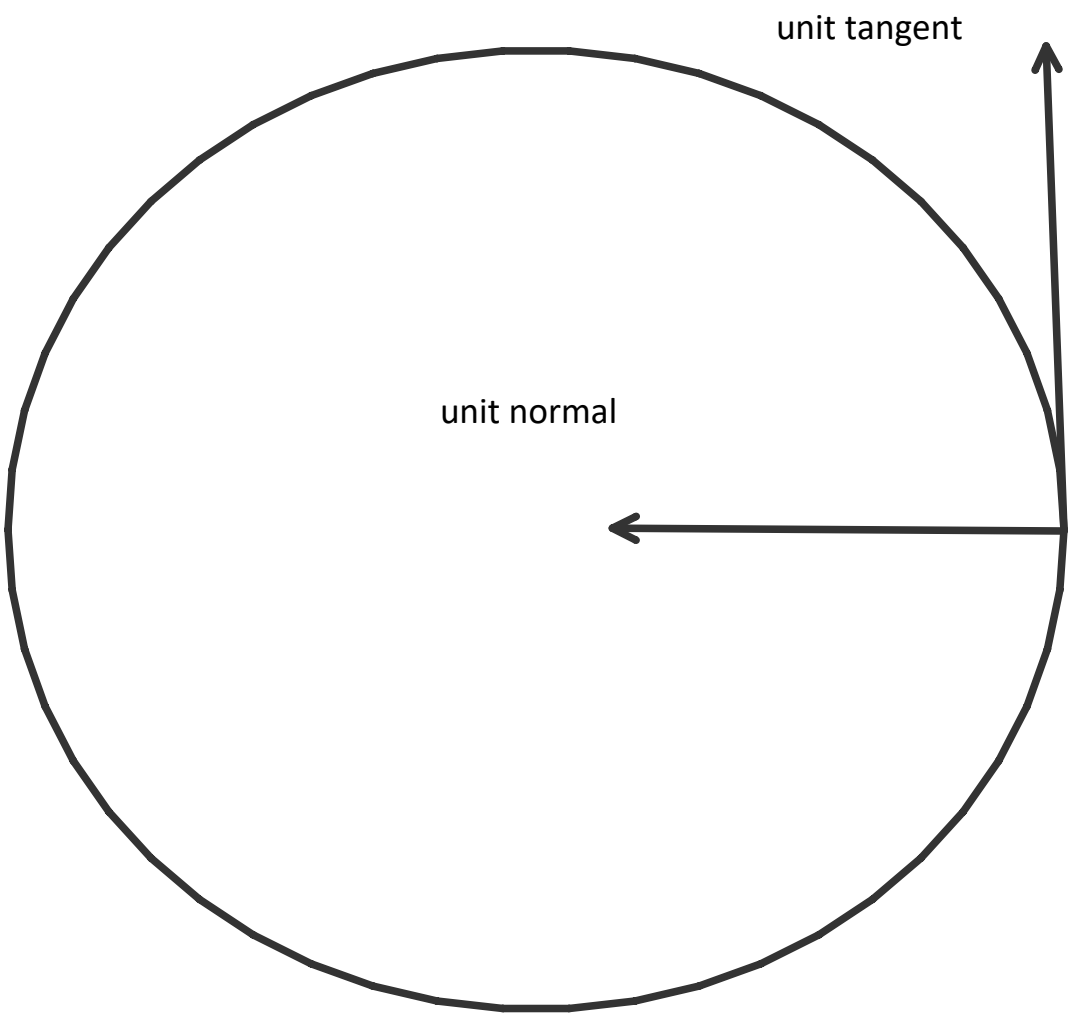
it's actually match from t to a 2dim matrix, $\frac{dr}{dt} = \left(\frac{dx}{dt}, \frac{dy}{dt}\right)$

unit tangent $T(t) = \frac{dr}{dt} * \frac{1}{\left|\left|\frac{dr}{dt}\right|\right|}$, length is 1

unit normal N(t) = $(-\frac{dy}{dt}, \frac{dx}{dt}) \frac{1}{\left|\left|\frac{dr}{dt}\right|\right|}$

N(t) dot_mul T(t) = 0

unit tangent


unit tangent
unit normal