vector functions / parametric representations.

$x = f(t)$

$y = g(t)$

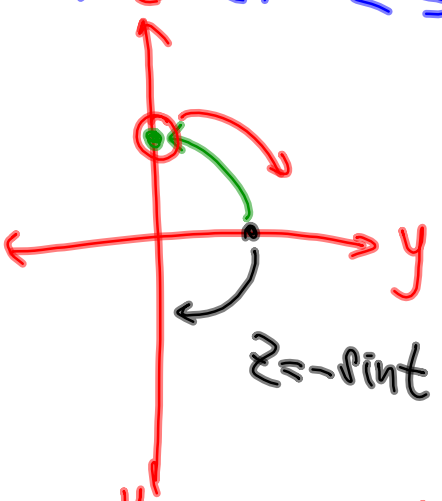
$z = h(t)$

ex) eq of a straight line.

1) $r(t) = \langle t, -2, t^2+1 \rangle$ $\quad z = x^2+1$

describe the graph

2) $r(t) = \langle 3, \cos t, \sin t \rangle$



$y = \cos t$, $z = \sin t$ $\Rightarrow$ $y^2+z^2 = \cos^2 t + \sin^2 t = 1$

$0 \le t \le 2\pi$

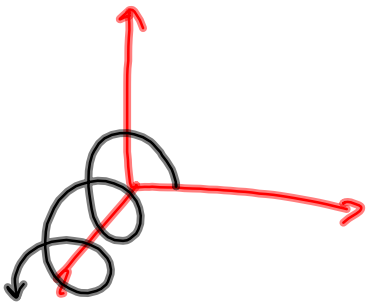
$y = \cos(t - \frac{\pi}{2})$

$z = -\sin(t - \frac{\pi}{2})$

$y = \cos\left(\left(\frac{t}{\frac{\pi}{6}}\right) - \frac{\pi}{2}\right)$

$z = -\sin\left(\left(\frac{t}{\frac{\pi}{6}}\right) - \frac{\pi}{2}\right)$

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



$r(t) = \langle t, 2\cos t, \sin t \rangle$

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