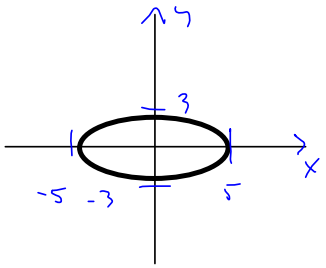
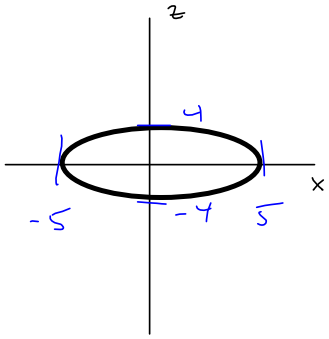
Test 1: Arrange a time to take your test with me, outside my office.

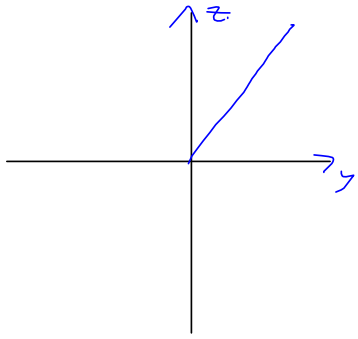
If we can't find a time, I'll send you over to Testing with a 2-hr time limit.

Wednesday OR Thursday.

$\vec{r}(t) = \langle 5\sin t, 3\cos t, 4\cos(t) \rangle$







$x = 5\sin t$

$\frac{x}{5} = \sin t, \quad \frac{y}{3} = \cos t$

$\frac{x^2}{5^2} + \frac{z^2}{y^2} = 1$

$\left(\frac{x}{5}\right)^2 + \left(\frac{y}{3}\right)^2 = 1$

$\frac{x^2}{5^2} + \frac{y^2}{3^2} = 1$

$y = 3\cos t$

$z = 4\cos t$

$\Rightarrow \frac{y}{3} = \frac{z}{4}$

$z = \frac{4}{3}y$

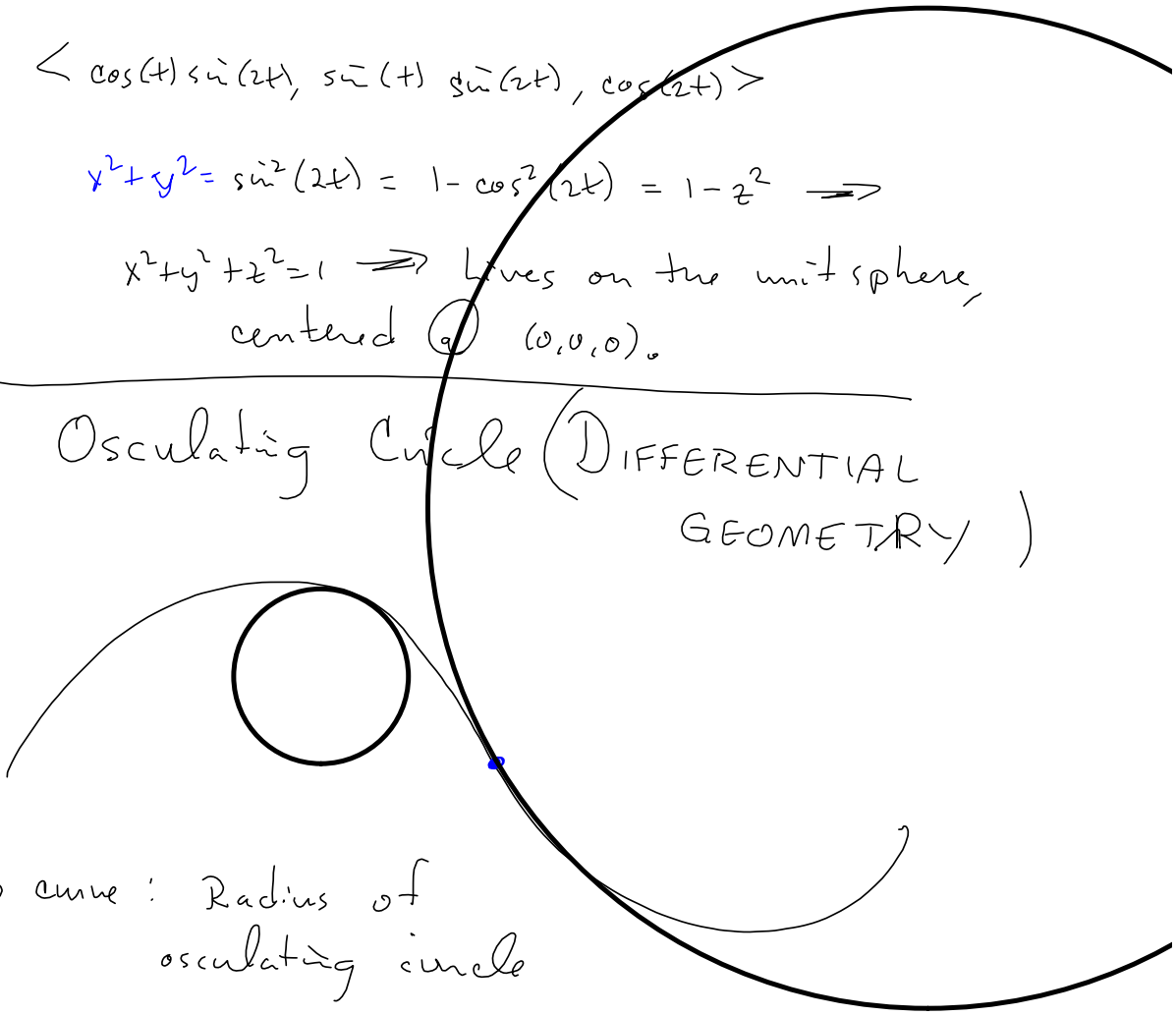
$$\frac{x^2}{3^2} + \frac{y^2}{3^2} + \frac{z^2}{4^2} = 1$$

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

$x^2+y^2 = \sin^2(2t) = 1-\cos^2(2t) = 1-z^2 \Rightarrow$

$x^2+y^2+z^2=1 \Rightarrow$ lives on the unit sphere, centered @ $(0,0,0)$.

Osculating Circle (DIFFERENTIAL GEOMETRY)



No curve: Radius of osculating circle is $r = \infty$.

It's a reciprocal relationship to curvature.

$\kappa \longrightarrow$ BIG
$r \longrightarrow$ SMALL

& conversely.