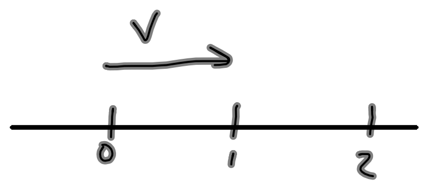
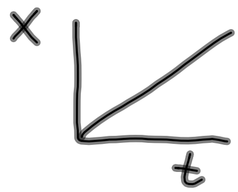
Rotational Kinematics

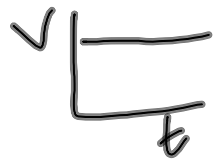
Angles rather than distances





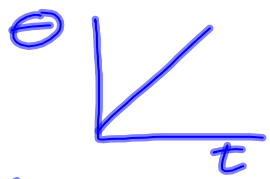
$x = vt$

$v = \frac{\Delta x}{\Delta t}$



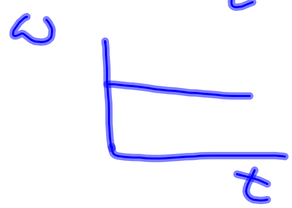
$v = v_0$

angular stuff



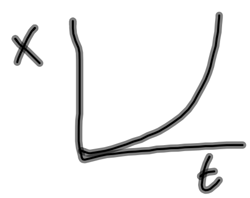
$\theta = \omega t$

$\omega = \frac{\Delta \theta}{\Delta t}$



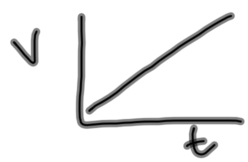
$\omega = \omega_0$

Linear Acceleration



$x = \frac{1}{2}at^2 + v_0 t + x_0$

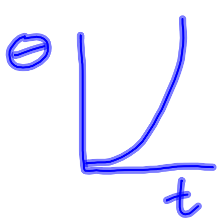
$a = \frac{\Delta v}{\Delta t}$



$v = at + v_0$

Angular acceleration

α = alpha



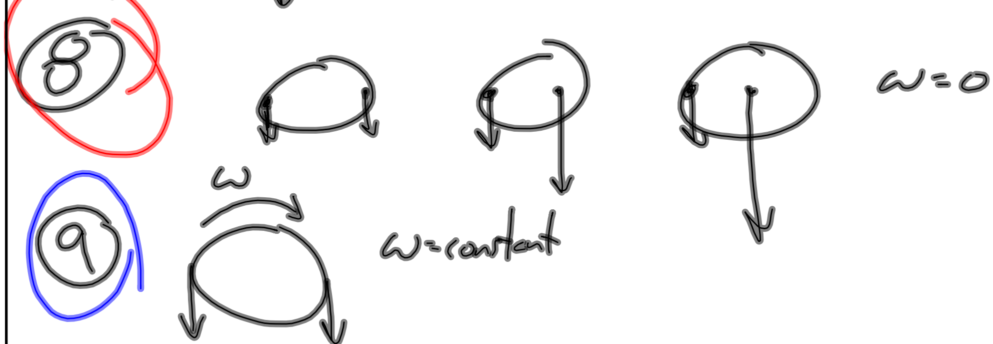
$\theta = \frac{1}{2}\alpha t^2 + \omega_0 t + \theta_0$

$\omega = \alpha t + \omega_0$

Why things spin or don't spin!

when forces are ballenced then is no acceleration ω=constant

when forces are not balanced it speeds up or slows down



Scenario 8

The closer you are to the pivot point the more force you need to stop the spin

Torque = Turning force

τ

RQ: If i apply a constant torque and I want to balance it, what is the relationship between the force I use and the distance from the pivot point.