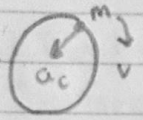
Motion in a Circle PH 111

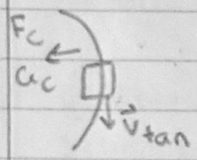
$\vec{a} \perp \vec{v}$

$a_c = v^2/R$



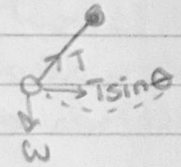
$F_c = ma_c$

$N - W = mv^2/R$



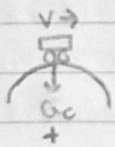
F_c never appears in a FBD

Examples 5.19-23 p. 150-154

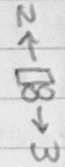


Vertical circle

Find N



$\vec{F}_{net} = m\vec{a}$



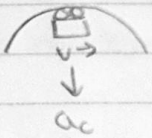
$W - N = ma_c = m\frac{v^2}{R}$

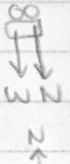
$N = m(g - v^2/R)$

Find $\vec{v}_{max}, \vec{v}_{min}$

$\vec{v}_{max} = \sqrt{gR}$

$\vec{v}_{min} = \sqrt{gR}$





$N + W = ma_c$

$N = m(v^2/R - g)$

$N - W = ma_c$

$N = m(v^2/R + g)$