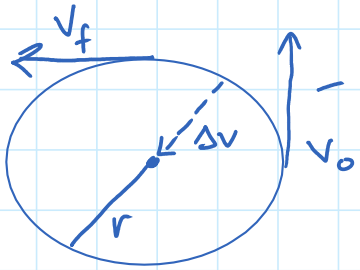
# Circular Motion I

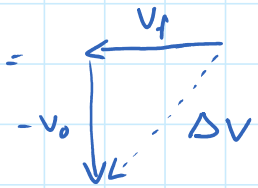
Wednesday, April 18, 2018 12:32 PM




velocity is tangent to the circle

$\Delta v = v_f - v_o$

$= v_f + (-v_o)$

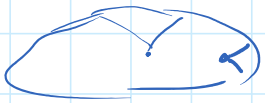



$Circ = 2\pi r$

$acc = \frac{\Delta v}{\Delta t}$ points inward as well.

## Centripetal Acceleration

Center seeking



$$a_c = \frac{v^2}{r}$$

$v = \frac{d}{t} = \frac{2\pi r}{t}$, $v^2 = \frac{4\pi^2 r^2}{t^2}$

t - time in the corner

T - period → time for one complete cycle

$$a_c = \frac{4\pi^2 r}{T^2}$$

$F = ma$ $F_c = ma_c = \frac{mv^2}{r}$

$= m\frac{4\pi^2 r}{T^2}$

$F_c$ is produced by the $F_{net}$ acting on an object.

$F_{net} = F_c$