

circular motion

a force moving in a circular experiences a centripetal force that acts towards the direction of **axis of rotation**

$$F = mv^2/r$$

velocity is a tangent to the force at a point

- constant speed but always changing directions
- therefore there is a variable acceleration

angular velocity

ω = angular velocity/frequency/speed
in rads^{-1}

$$v = (2\pi/T)r = (2\pi f)r$$

therefore

$$v = \omega r$$

loops

for vertical loops:

you have a circle

A- left furthest side

B- highest point

C- right furthest side

D- bottom

when travelling-

at A/C > support force = mv^2/r

$$B > mv^2/r - mg$$

$$D > mv^2/r + mg$$

banked planes/banked tracks:

$$mv^2/r = mg \tan \theta$$

to try and visualise-

-plane coming towards you

-angled towards the left the right wing face towards the sky

-there is mg downwards

-centripetal to the left (axis of rotation)

- there is a force u angled up the diagonal left at θ degrees to the normal



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