Work done by variable force

`W = int dW = int\_0^s F\*dx`

Work done by the force is given by area under force-displacement graph

Work energy theorem

The work done by the net force acting on an object is equal to the change in the kinetic energy of that object

W = change in kinetic energy

`P = w/t` t = timetaken to do work w = work done p =power

` P = Fv`

1hp = 746 W

Mean power `= w/t = (DeltaK.E)/t`

Circular motion

`Omega = (dtheta)/(dt)`

`a = v (dv)/(dt)`

`alpha = omega (domega)/(dt)`

`v = romega`

`a = ralpha`

Radius of curvature of the instantaneous circle

R = ([1 + ((dy)/(dx))^2])^(3/2)/abs((d^2y)/(dx^2))

Centripetal force

F = (mv^2)/r

Centripetal force does no work

Centrifugal force

(it is like pseudo force in laws of motion) imagine going in a car turning along curve we move towords a side due to this force .it is applicable only for non-inertial frame of reference.

`F = (dU)/(dx)`

Sate of equilibrium : `(dU)/(dx) = 0`

Sum of moments about C = 0

&image&

C

A

B

F

F

(CB)F + (CA)F = 0