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WORK ENERGY AND POWER

(1). The work-energy theorem states that for conservative forces acting on the body, the change in kinetic energy of a body equal to the net work done by the net force on the body.

$1 \_ = W_{riet}$

Where Ki and K1 are initial and final kinetic energies and Wr.L., is the net work done.

12p. For a conservative force in a ne dimension,. Potential energy function is defined such that

F(x) = __ dV(x)

{3p. Average power of a force i$ defiriped the ratiQ ef the wprk, ilk to the total time t taken,

$P_{a'}$ =

{4l. The instantaneous power is defined as the limiting value of the average power as time Interval appmachpe5 acre.. r = $\frac{}{dt}$

Power can also be expressed as

P F = $\frac{}{dt}$ here, d V Is displacement vector.

OE Work clone by Constant Farce

= F -S

(6). Work done by multiple forces.

$\Sigma \vec{F} = \vec{F}_1 + \vec{F}_2 + \vec{F}_3 + ...$

VIO =F, +6

or W = W, $+W_2 \div W_3 \div$_...

01 Work clone by A variable force

=

(84. Relation between momentum and kinetic energy

K $\frac{F.'}{2rn}$ and P K P _ Linear momentum

Nil. Potential energy

dU = I.e.,, 1 TF ri

U =IF df =-w

{20). Conservative Farces

F = —
r

(11). Work•Energy theorem

+ + 1/irn AK

{12). Modified Farm of work-Energy Theorem

W = -AU

Wg(+v = AK +

+ vig5 =AE

(12]. Power

The average power fP or F_{ay} delivered biv an agent is glyen by P or =

P = F• EIS / dt = F cIS / ch = F̄ ∇

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