

6PS Physics - Weekly con

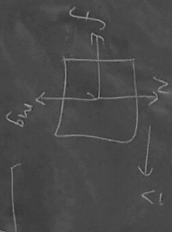
Non conservative work - Energy is

$$W = Fd \cos \theta$$

$$W = \Delta E$$

$$KE = \frac{1}{2}mv^2$$

$$W = Fd \cos \theta = \int d \cos 180^\circ = -fd$$



Not conserved

Negative work is when energy is taken away from the system.
Positive work is when energy is added to the system

friction always opposes motion so it does negative work, it takes energy away

Wabblite MU - TI 84 calculator on phone

A 10 kg box has an initial velocity of 5 m/s . Friction acts on the box & slows it down to a stop.

a) How much work did friction do on the box?

b) Say force of friction is 25N, how far did the box go?

$$a) W = \Delta E$$

$$KE = 125 \text{ J}$$

$$W = -125 \text{ J}$$

$$b) KE = \frac{1}{2}mv^2 = \frac{1}{2}(10 \text{ kg})(5 \text{ m/s})^2 = 125 \text{ J}$$

$$W = Fd \cos \theta = -125 \text{ J}$$

$$(25 \text{ N})d \cos 180^\circ = -125 \text{ J}$$

$$d = \frac{-125 \text{ J}}{-25 \text{ N}} = 5 \text{ m}$$

$$P = \frac{W}{t}$$

$P = Fv$ Force velocity

$$W = Fd \cos \theta$$

$$W = \Delta E$$

Class work

1) A 1000 kg car starts to a stop. It had an initial velocity of 20 m/s .
a) How much work did friction do on the car?

b) If the force of friction was 5000N how far did the car go?

c) If it took 4.0 sec for the car to come to a stop, what was the power from friction?

$$P = \frac{W}{t}$$

