

§6-1 Work + Energy

- Work is not energy, but it is related to the transfer of energy to an object.
- Work is done if a force acts on an object in the direction of its displacement.

$$W = F_{\parallel} \Delta d$$

where W is the work done on an object ($N \cdot m = J$)

F_{\parallel} is the force acting in the direction of the displacement (N)

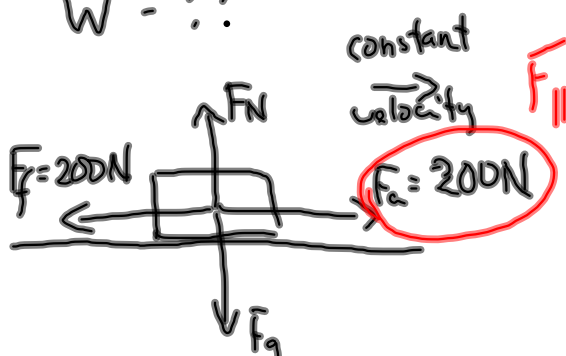
Δd is the displacement (m)

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$$\Delta d = 3.00 \text{ m}$$

$$F_a = 2.00 \times 10^2 \text{ N}$$

$$W = ??$$



$$W = F_{\parallel} \Delta d$$

$$W = (2.00 \times 10^2 \text{ N})(3.00 \text{ m})$$

$$W = 6.00 \times 10^2 \text{ J}$$

↑ work is a scalar

No work is done when: (see p222)

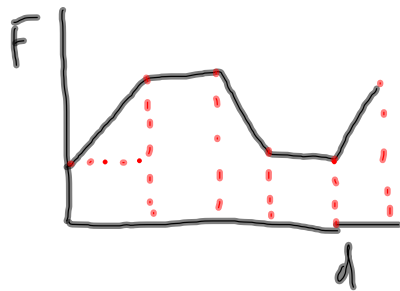
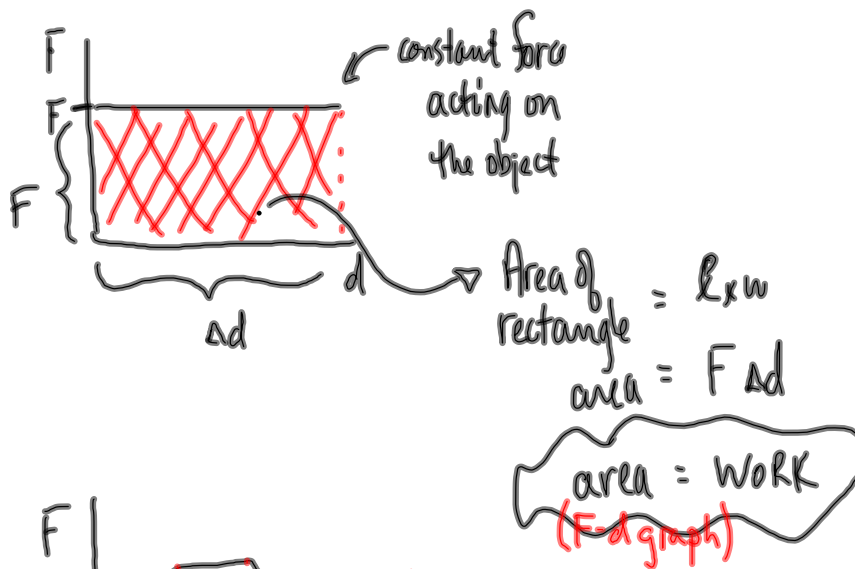
- ① There is a force but no motion ($\Delta d = 0$)
- ② There is motion but no force ($F_{\parallel} = 0$)
- ③ There is a force perpendicular to the motion ($\vec{F} \perp \Delta \vec{d}$)

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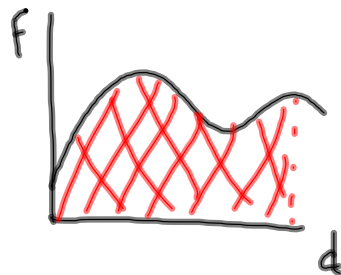


No work is done since the force (tension) is perpendicular to the direction of motion at any point along the circular path.

Consider a F-d graph



Area of a trapezoid:
 $A = \frac{1}{2} (h_1 + h_2) b$



count squares.
 or
 use L.P. to find integral.

Look over mp/227

To Do:

- ① PP/221
- ② PP/225
- ③ PP/229(11)