



$$F_a = 85 \text{ N}$$

$$m = 3 \text{ kg}$$

$$\phi = 53^\circ$$

$$h = 0.15 \text{ m}$$

Work Problem

Assume frictionless

Q) How much work is done on the box by  $F_a$  when the box has moved through vertical distance  $0.15 \text{ m}$ ?

A) Use the work-energy theorem.

A change in kinetic energy (which here also means a change in potential energy since there's no friction energy) is the same as the amount of work done. So what's the change in potential energy?

$$\Delta U = mgh = (3)(9.8)(0.15)$$

$$= 4.41 \text{ Joules}$$

So there's no need to know  $F_a$ 's magnitude or direction. That's just extra info