Solution work by

m

v0

0

L

F

x

Particle velocity is . Thus, trajectory since at

Consequently:

Thus, we can write for the amount of work done:

1. We note: and naively, we could expect that the kinetic energy of the particle would have increased. But that isn’t the case: it started with and it kept this along the entire path as it is given that the particle is traveling with a constant velocity.

From this last statement, we immediately learn, that there must be a second force acting on the particle. This force is exactly equal and opposite to *F* at all times! Otherwise, the particle would accelerate and change its velocity. Consequently, this second force also perform work on *m*, the amount is exactly *-W* and thus the total work done on the particle is zero which reflects that the particle does not change its kinetic energy.