Work and Kinetic Energy

Starting with the 2nd Newton's Law:

$$F = ma$$

One can derive another important result:

"Change in kinetic energy is equal to the mechanical work done by all forces"

$$\Delta K = W$$

$K = \dfrac{mv^2}{2},$ is called Kinetic Energy of an object

$W = F\Delta x,$ is called Mechanical Work

(Work = Force x Displacement)

Homework

The car of mass *m=2000 kg* moves at speed v=30m/s when suddenly the driver applies breaks. Find the distance the car will travel before coming to complete stop, if friction coefficient is μ=0.5.

Please use the Kinetic Energy theorem (ΔK=W) to solve it. Remember that friction force is F=μN, where N is normal reaction.