Answer on Question #50136, Physics, Mechanics | Kinematics | Dynamics

Task:

A rough slope of length 5m is inclined at an angel of 30^0 to the horizontal. A body of mass 2kg is released from the top of the slope and travels down the slope against a constant resistance. The body reaches the bottom of the slope with speed 2 m/s. Find the work done against the resistance.

Answer:

Component of weight acting down slope=$mgsin30^0$=10N.

Resultant force down slope = ma= Component of weight acting down slope - friction

$V^2=U^2+2as$, U=0, so $a=V^2/2s$.

work done against the resistance= (Component of weight acting down slope- Resultant force down slope)*s = 50J – (m $V^2/2s$)*s=50J-4J=46J.