Skiing w/ Friction

A 50 kg skier goes down a 78 meter high hill with a variety of slopes. She finally stops at the bottom of the hill. If friction is the force responsible for her stopping, how much work does it do?

Work Energy Theorem:

$$W_{nc} = K_f - K_i + U_f - U_i$$

$$= \tfrac{1}{2} m v_f^2 - \tfrac{1}{2} m v_i^2 + m g y_f - m g y_i$$

$$= 0 + 0 + 0 - m g y_i$$

$$= -50 \times 9.8 \times 78 \text{ Joules}$$

$$= -38200 \text{ Joules}$$

Similar to bob sled homework