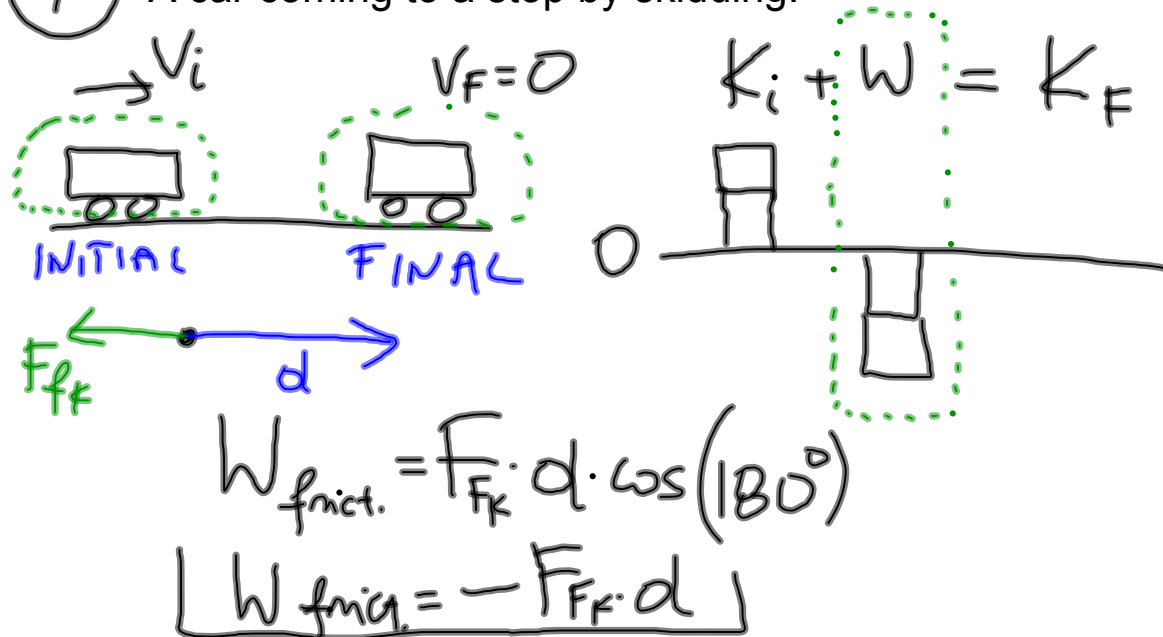Work done by the force of friction and how it relates to the work-energy principle.

(1)   A car coming to a stop by skidding.

$\rightarrow V_i$ $V_F = 0$ $K_i + W = K_F$

INITIAL   FINAL   0

F_{fk} d

$$W_{frict.} = F_{FK} \cdot d \cdot \cos(180°)$$

$$\boxed{W_{fric.} = -F_{FK} \cdot d}$$

$$\boxed{K_i - F_{FK} \cdot d = 0}$$

$$0 = \Delta U_{INT}$$ NOT TRUE!

The tires & the road surface got warmer!

$$\boxed{p. 202}$$ $$\boxed{\Delta U_{INT} = + F_{FK} \cdot d}$$

$\boxed{ex. 1}$

① AT REST

SURFACE

20 m $\mu = 0$

F_N

$F \quad F_K$

FINISH $V = 2 \frac{m}{s}$

② ③

F_g

$h = 0$

$\mu_K = ?$ $\boxed{EARTH}$

10 m $m = 20 \, kg$

C of E ①—③

$\mu_K \neq 0$ ROUGH.

$$U_1 + W = U_3 + \Delta U_{INT}$$

$$U_1 = U_3 + \Delta U_{INT}$$

Jan 6-8:16 AM

$$U_{g_1} = K_3 + \Delta U_{INT}$$

$$mgh_1 = \frac{1}{2} m V_3^2 + \Delta U_{INT}$$

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