



Find a) F_A b) W_M c) W_{FR} d) W_{mg} e) W_{NET}

Solve a) $\sum F_x = m a_x$ $\sum F_y = m a_y$
 $mg \sin \theta - F_R - F_A = 0$ $F_N - mg \cos \theta = 0$

$$F_A = mg \sin \theta - F_R$$

$$F_R = \mu_k \cdot F_N$$

$$F_N = mg \cos \theta$$

$$F_A = mg \sin \theta - \mu_k \cdot (mg \cos \theta)$$

$$= (330)(9.8)(\sin 29^\circ) - [(0.4)(330)(9.8)(\cos 29^\circ)]$$

$$F_A = 376 \text{ N}$$

b) $W_M = F_A \cdot d \cdot \cos \theta$
 $W_M = (376)(3.6)(\cos 119^\circ)$

$$W_M = -1354 \text{ J}$$

c) $F_R = \mu_k mg \cos \theta$
 $F_R = (0.4)(330)(9.8)(\cos 29^\circ)$
 $F_R = 1442.2 \text{ N}$

$$W_{FR} = F_R \cdot d \cdot \cos 180^\circ$$

$$= (1442.2)(3.6)(-1)$$

$$W_{FR} = -4112 \text{ J}$$

d) $W_{mg} = (mg \sin \theta) d \cos \theta$
 $= (330)(9.8)(\sin 29^\circ)(3.6)(\cos 0^\circ)$

$$W_{mg} = 5466 \text{ J}$$

e) $W_{NET} = -1354 - 4112 + 5466$

$$W_{NET} = 0$$