Physics 101Rec
Quiz#6b
Chapter 8

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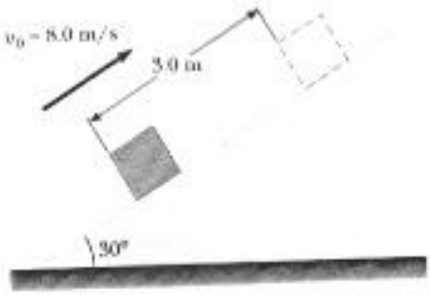
Name: Key Id: Sect:

A 5.0 kg block is set into motion up an incline plane with an initial speed of 8.0 m/s. The block comes to rest after traveling 3.0 m along the plane, which is inclined at an angle of 30^0 to the horizontal. What is the coefficient of kinetic friction between the block and incline?



$$\Delta K + \Delta U_g = -f_k d$$

$$\left(0 - \frac{1}{2} m v_i^2\right) + \left(mg\, d\sin 30^\circ - 0\right) = -\mu_k mg\cos\theta\, d$$

$$\mu_k = \frac{v_i^2/2 - g d \sin 30^\circ}{g\cos\theta\, d} = \frac{17.3}{25.5} = \boxed{0.68}$$