The Good (from Physics 8.1, Fall 2010, MIT)

An object of mass m, starting from rest, slides down an inclined plane of length ℓ. The plane is inclined by an angle θ to the ground. The coefficient of kinetic friction of the plane is $\mu_{k,1}$. At the bottom of the plane, the mass slides along a rough surface with a coefficient of kinetic friction $\mu_{k,2}$ until comes to rest. (a) Find the speed of the object at the bottom of the plane. (b) Compute the distance that the object slides along the rough surface.

The Bad (Problem 6-70 from Tipler's)

A box of mass m is at rest at the bottom of a frictionless inclined plane. The box is attached to a string that pulls with a constant tension, T. (a) Find the work done by the tension T as the box moves through a distance x along the plane. (b) Find the speed of the box as a function of x. (c) Determine the power delivered by the tension in the string as a function of x.

The Ugly (Problem 7-42 from Tipler's)

The system shown in figure below is initially at rest when the lower string is cut. Find the speed of the objects when they are momentarily at the same height. The frictionless pulley has negligible mass.