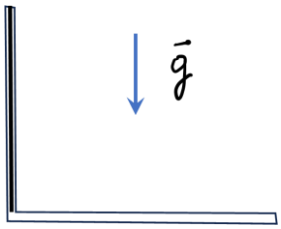
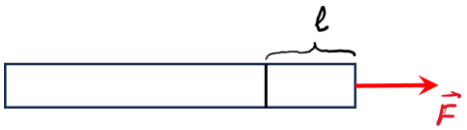
Homework 26

1. A smooth, uniform rope of length $\boldsymbol{l}$ is held inside the vertical section of a bent tube in such a way that its lower end just touches the horizontal section of the tube. The rope is then released. How long will it take for the rope to move completely into the horizontal section of the tube? Neglect friction.



2. A constant force $\boldsymbol{F}$ is applied along a stationary plasticine bar of mass $\boldsymbol{m}$. During the time $t$that the force acts, the end of the bar to which the force is applied moves a distance $\boldsymbol{l}$ in the direction of the force. By how much does the internal energy of the bar increase during the time $\boldsymbol{t}$?



3. Determine the angular acceleration of a pulley of radius $\boldsymbol{R}$ and moment of inertia $\boldsymbol{J}$, caused by two masses $\boldsymbol{m_1}$ and $\boldsymbol{m_2}$ attached to the ends of a string passing over the pulley, assuming that the string does not slip on the pulley.