1. The smooth 180 lb. pipe has a length of 20 ft and negligible thickness. It is carried on a truck as shown. Determine the maximum acceleration the truck can have without causing the normal reaction at A to be zero. Also, determine the horizontal and vertical components of for which the truck exerts on the pipe at B.
   \[ \text{Ans. } a_{\text{truck}} = 77.3 \text{ ft/s}^2 \]

2. The passengers, the gondola, and its swinging frame have a total mass of 50,000 kg, a mass center at G, and a radius of gyration about B of \( \kappa_B = 3.5 \text{ m} \). Additionally, the 3,000 kg block of steel plates at A can be approximated as a point of concentrated mass. Determine the horizontal and vertical components of reaction at the pin B if the gondola is freely swinging with an angular velocity of 1 rad/s at its lowest point as shown. Also, what is the gondola’s angular acceleration at this instant?
   \[ \text{Ans. } B_x = 0, B_y = 761 \text{ kN} \]