Homework H.5.A

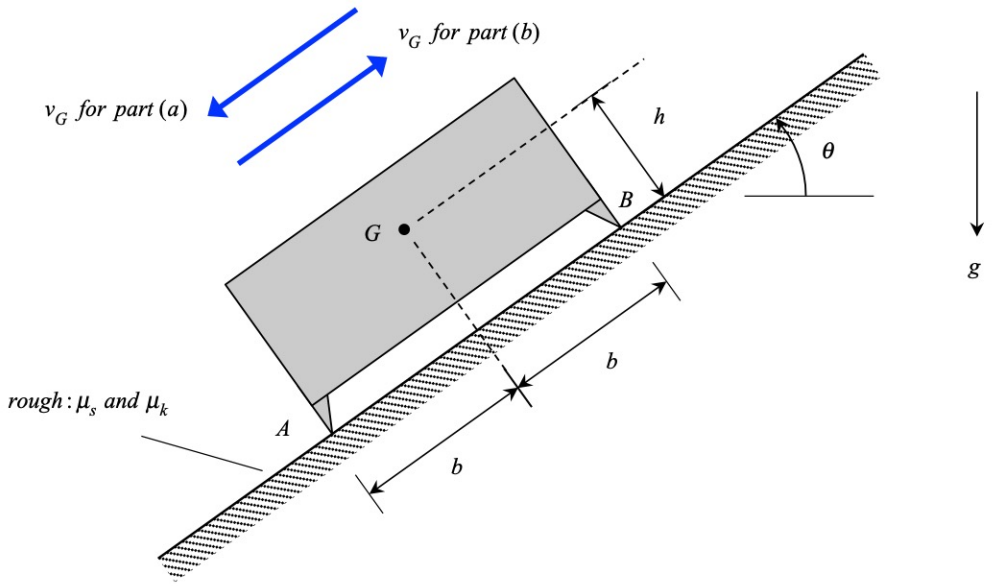
Given: A crate of mass m slides with a speed of v_G on a rough inclined surface (with coefficients of static and kinetic friction between the crate and the incline of μ_s and μ_k, respectively). The center of mass of the crate is located at point G.

Find: For this problem:

(a) If the crate is moving DOWN in the incline, determine the reactions at supports A and B on the crate. Express each answer in terms of a fraction of the crate's weight mg.

(b) If the crate is moving UP in the incline, determine the reactions at supports A and B on the crate. Express each answer in terms of a fraction of the crate's weight mg.

(c) Compare your answers in (a) and (b). Explain in words why they are different.



Use the following parameters in your analysis: $b = h$, $\mu_s = 0.6$, $\mu_k = 0.4$ and $\theta = 53.13°$.