Problem 1

I) FBDs
   A) System of cart + robot
      1) The complete FBD should include gravitational forces and normal forces @ wheels of the cart.
      2) Inertial forces (e.g. mg) and internal forces (e.g. forces @ wheels of the robot) do not belong on the FBD.
   B) Robot
      1) If you put 3 forces @ each wheel, you must say that Ay = Cx = By = 0.
      2) Saying Ax = Cx = By = 0 is an entirely different problem.
      3) The friction force at wheel B is not μN (no motion relative to cart+).
      4) Again, inertial forces do not belong on the FBD.
   C) The force F is not applied directly to the robot and shouldn't be on the FBD.

II) LMB of system
    A) \( \Sigma F = \Sigma = ma \) where \( m = m_{\text{total}} = 2m \) not just m
    B) \( F \) is the only force acting in the \( ^\uparrow \) direction. (no friction @ wheels of the cart+)
    C) \( \Sigma G \) has no component in the \( ^\uparrow \) direction.

III) AMB/axis BC - MANY problems here
    A) There were many errors in finding moment arms by geometry. UNNECESSARY!
    B) AMB/axis BC: \( \Sigma M_{BC} = H/3 \cdot \lambda_{BC} \)
    C) NOT \( \Sigma M_{BC} = H/3 \cdot \lambda_{BC} \).
    D) This means nothing!
    E) \( \Sigma M_{BC} \) is not always 0! You don't need to have a rotating body to have angular momentum about a pt.