Problem P1

The 5-oz ball is translating with a velocity of $v_A = 80$ ft/s perpendicular to the bat just before impact. The player is swinging the 32-oz bat with angular velocity $\omega = 18$ rad/s before the impact. Point C is the bat's instantaneous center bother before and after the impact. The distances b = 16 in and y = 28 in. The bat's mass moment of inertia about its center of mass is 0.035 slug-ft^2. The coefficient of restitution is 0.6, and the duration of the impact is 0.008s.

a) Plot the average impulsive reaction force at point A in the x-direction, A_x, as a function of d for d = 0 to 1 ft

b) Determine the location d so that the horizontal impulsive force is zero.