2017 F=ma Exam: Problem 12

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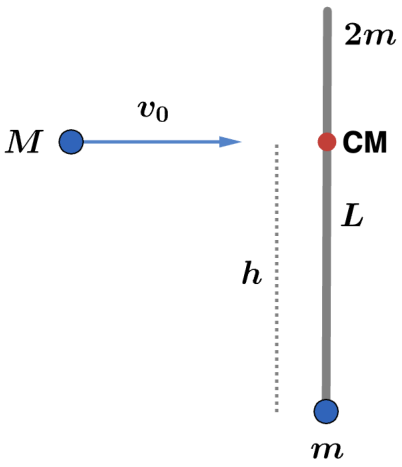

We found in the previous problem that if we pick the CM as the axis of rotation, the system would have no angular momentum for no rotation. The initial angular momentum is

$$L_i = Mv_0r_0 = 0$$

where r_0 is the moment arm of mass M. Thus as long as we have $r_0 = 0$, M can take any value. Hence, the answer is $\boxed{\text{E}}$.