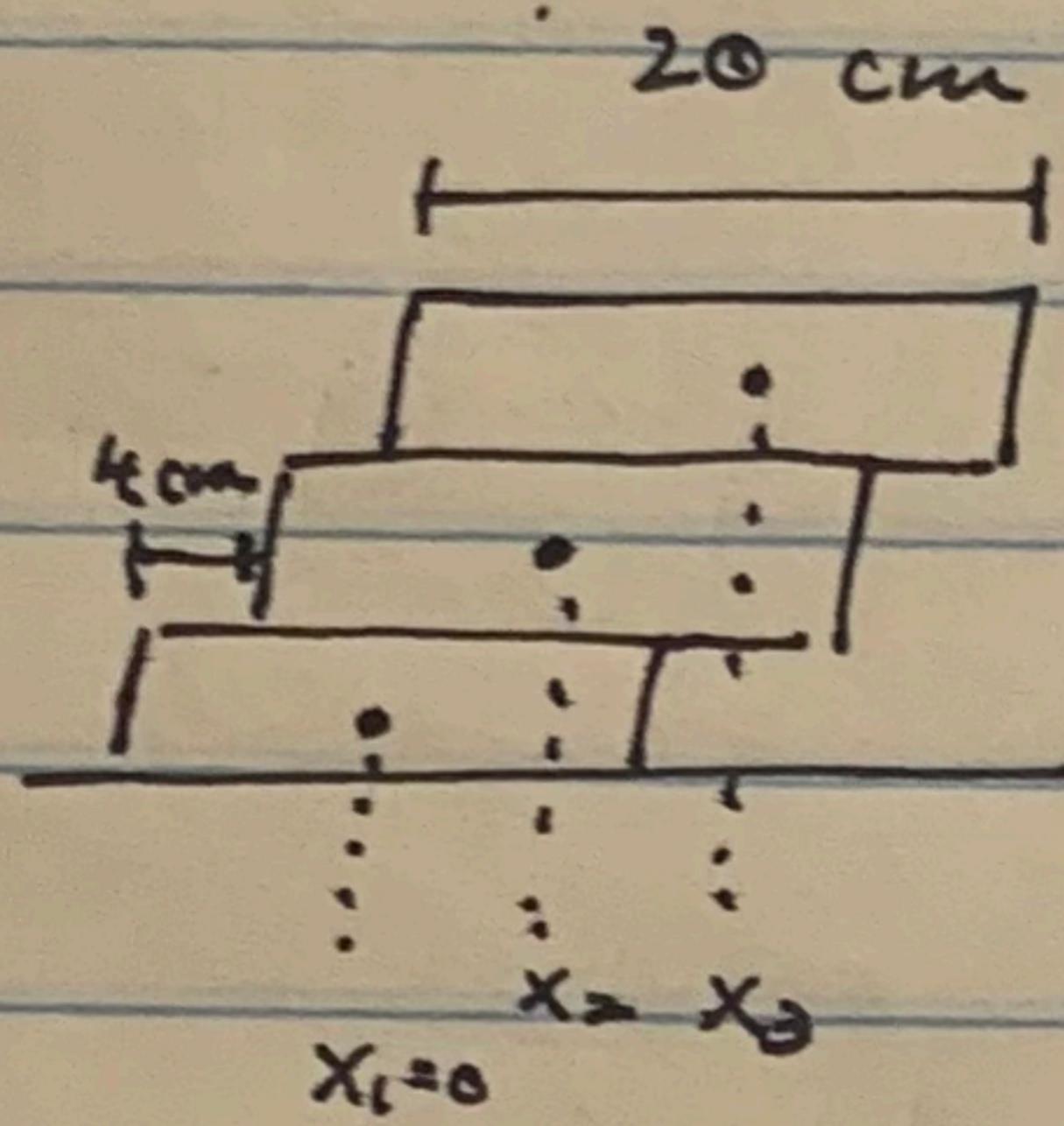


Kenny (Guanru) Chen

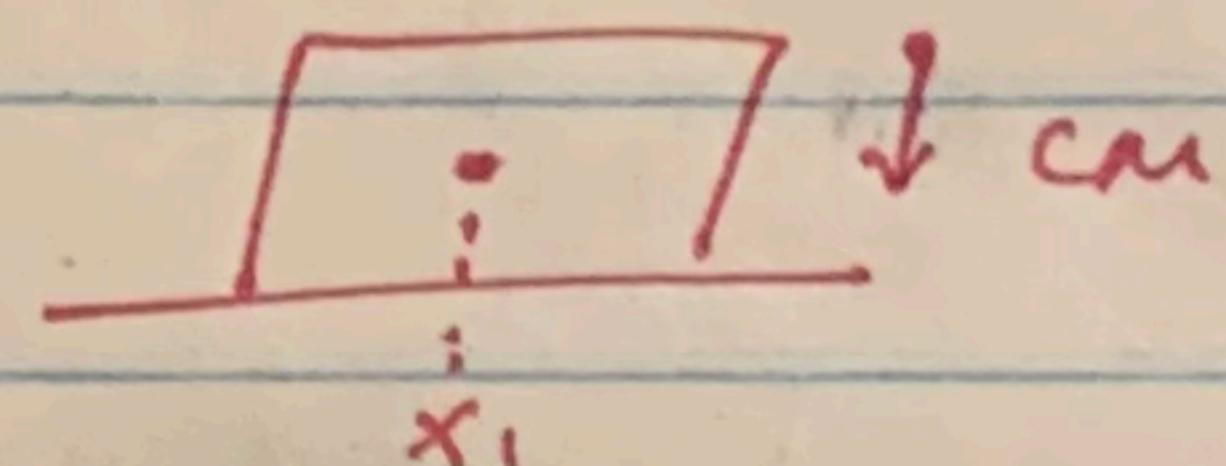
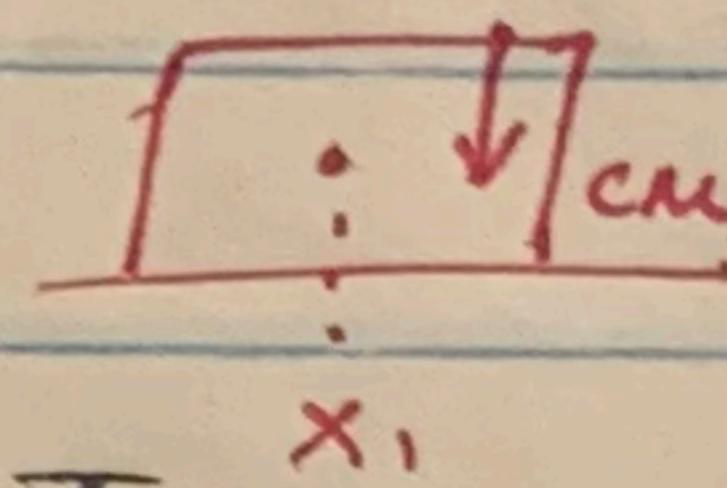
cheng141

Oct 26, 2025



Good

Bad



The stack will topple over when the com of all the blocks except the first goes over the right edge of the first block.

The center of mass of the stacked blocks is

$$x_{cm} = \frac{x_2 m + x_3 m + \dots + x_{N-1} m}{m + m + \dots + m}$$

where N is the total # of blocks.

$$x_{cm} = \frac{x_2 + x_3 + \dots + x_{N-1}}{1 + 1 + \dots + 1}$$

$$= \frac{1}{N-1} (4 + 8 + \dots + x_{N-1})$$

$$= \frac{1}{N-1} \sum_{i=1}^{N-1} 4i$$

$$= \frac{4}{N-1} \frac{N(N-1)}{2}$$

$$= 2N$$

And since we want $x_{cm} \leq \frac{20}{2} = 10$

$$2N \leq 10$$

$$N \leq 5$$

$$N = 5$$

∴ We can have at most 5 bricks stacked this way.