

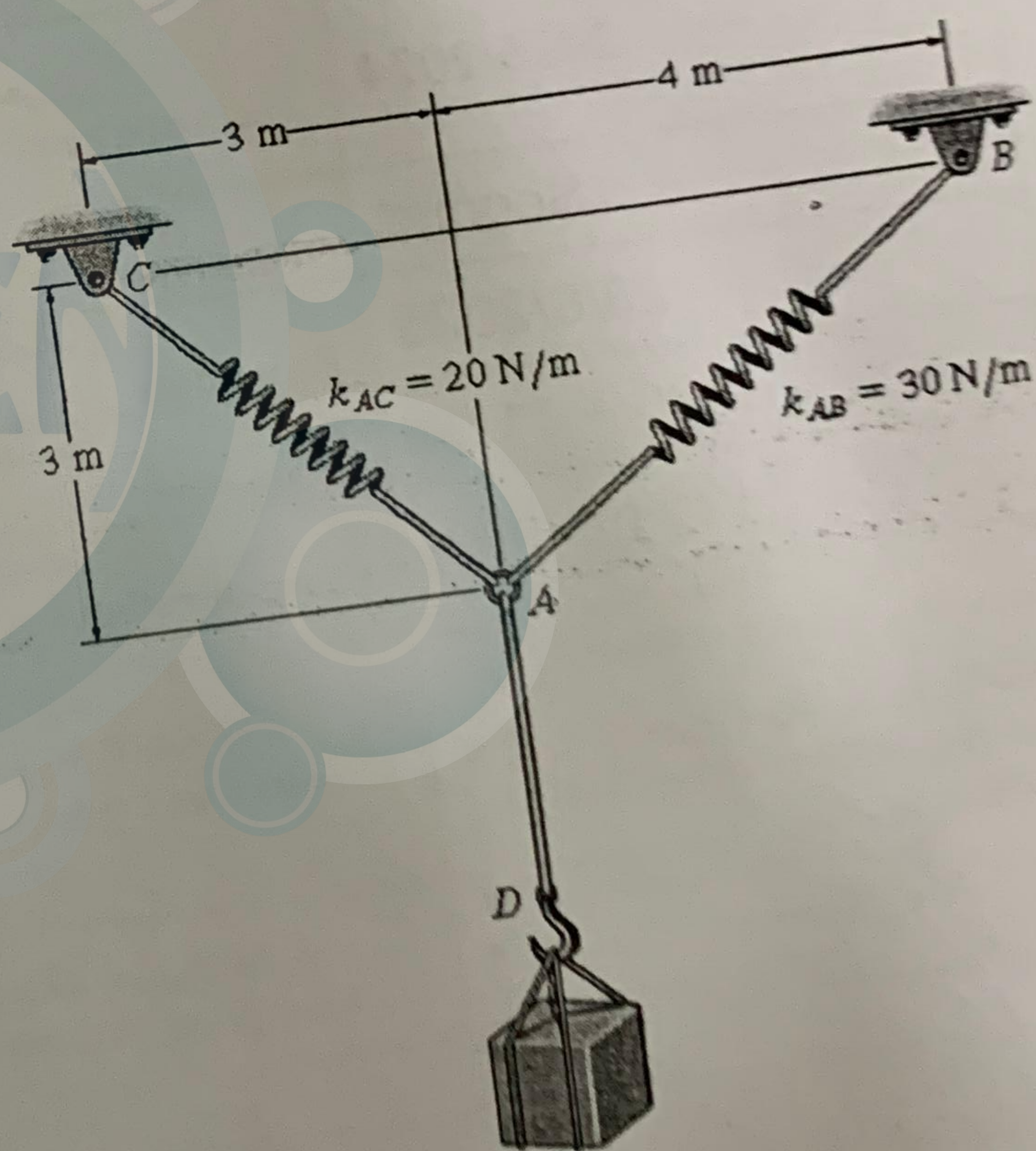
CH 4: Moment : $M = F \times d$ 2D
 المسافة المبروزة

C.W $\Rightarrow -$
 C.C.W $\Rightarrow +$

3D $\vec{M}_O = \vec{r}_{OA} \times \vec{F}$

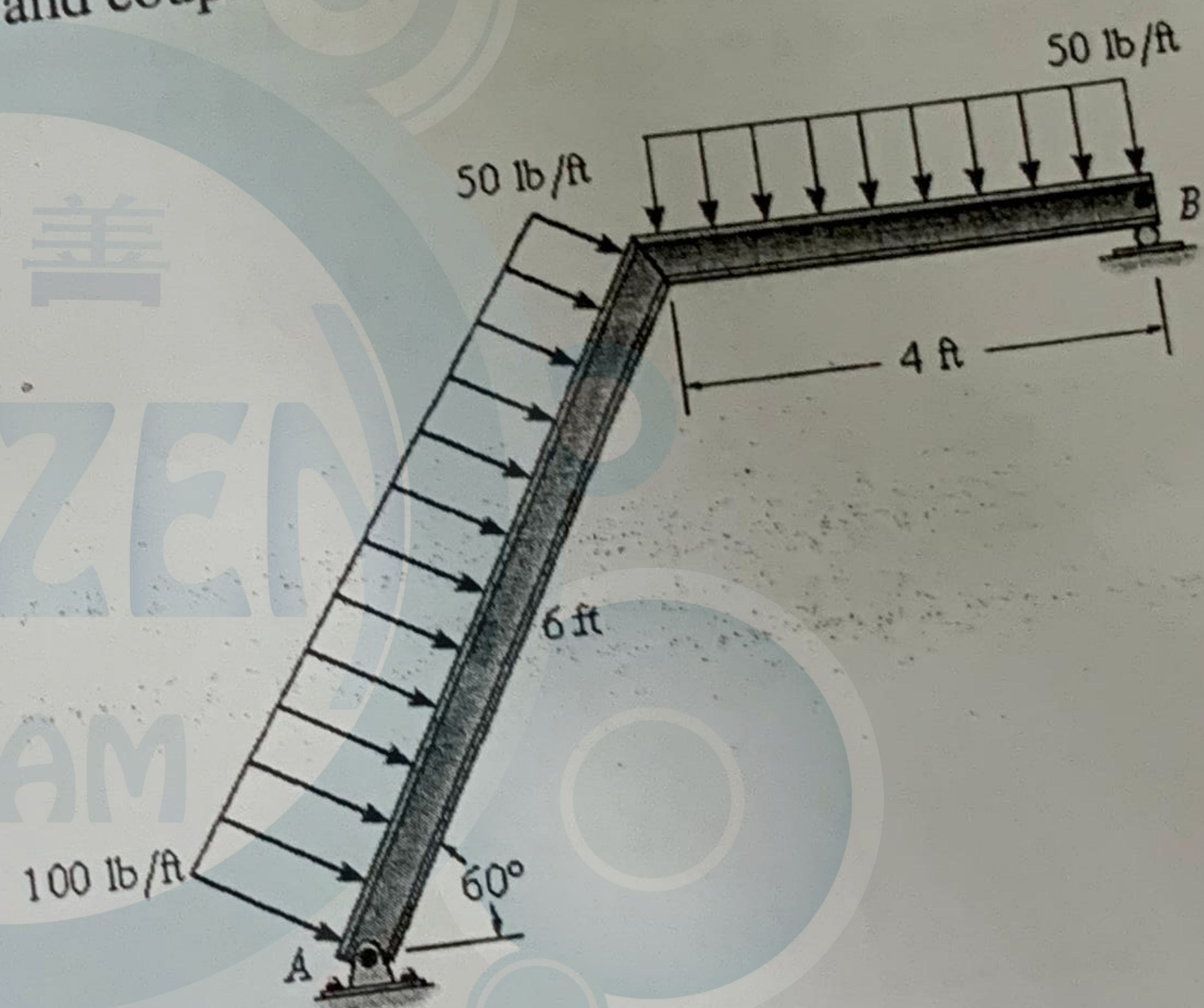
Q-1 (10 Points)

The unstretched length of spring AB is 3 m. If the block is held in the equilibrium position shown, determine the mass of the block at D.



Q-2 (10 Points)

Replace the loading by an equivalent resultant force and couple moment acting at point B.



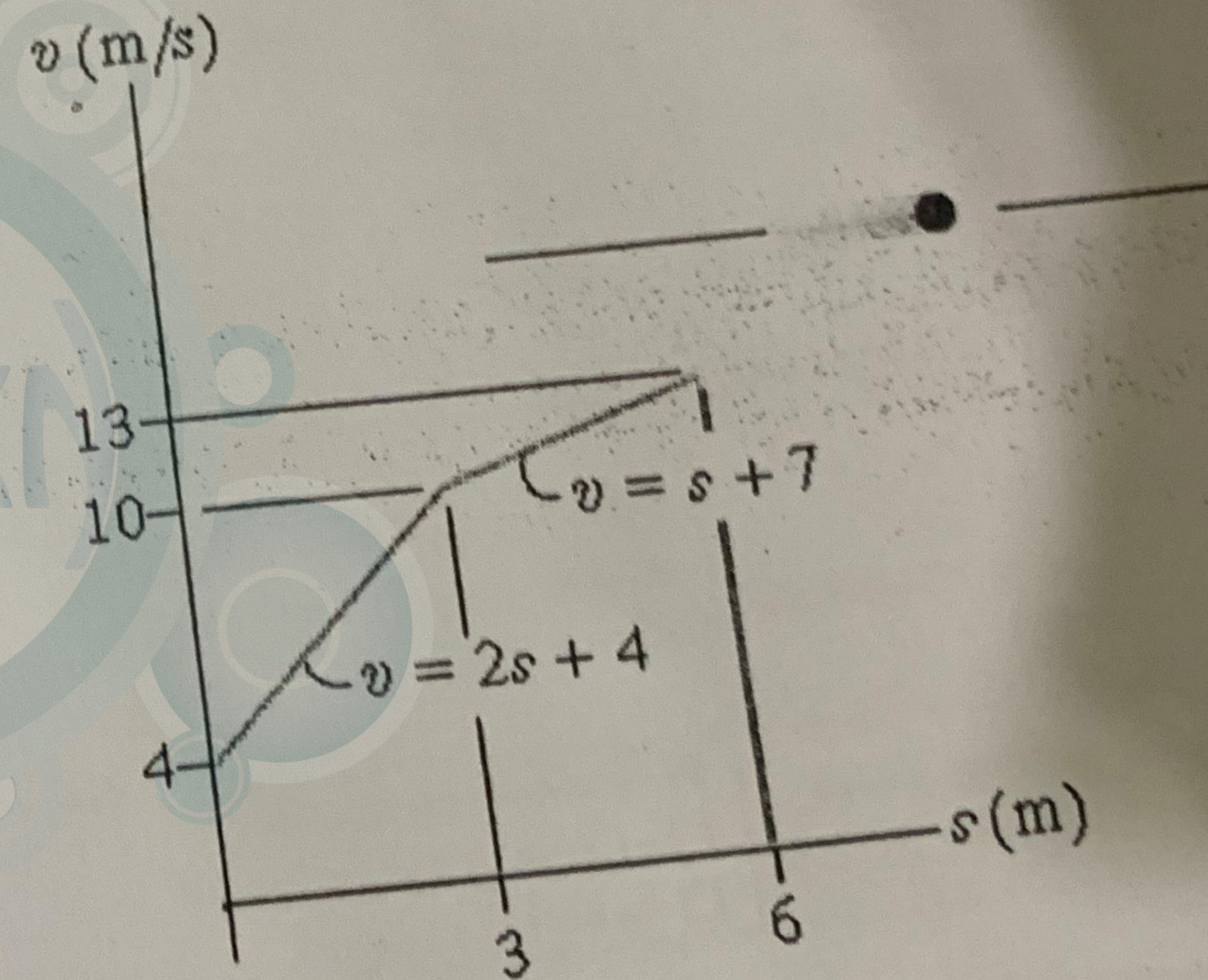
Q-3 (10 Points)

A sphere is fired downwards into a medium with an initial speed of 27 m/s. If it experiences a deceleration of $a = (-6t) \text{ m/s}^2$ where t is in seconds, determine the distance traveled before it stops.

KAIZEN
TEAM

Q-4 (10 Points)

The particle travels along a straight line with the velocity described by the graph. Construct the a-s graph.



$$\vec{M}_O = \vec{r}_{OA} \times \vec{F}$$

Product

Q-5 (10 Points)

The position of a box sliding down the spiral can be described by $\vec{r} = [2 \sin(2t)\mathbf{i} + 2 \cos t\mathbf{j} - 2t^2\mathbf{k}]$ ft, where t is in seconds and the arguments for the sine and cosine are in radians. Determine the velocity and acceleration of the box when $t = 2$ s.

