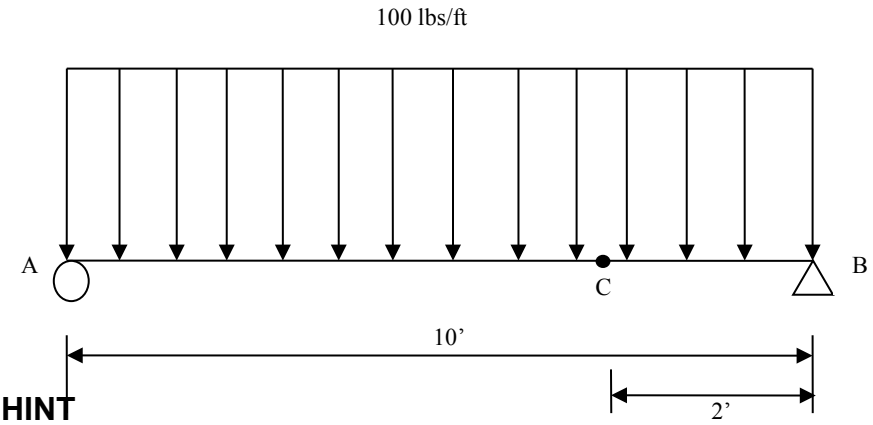
TOPIC

Engineering Mechanics (Statics and Dynamics) – Section VII – Question 5

QUESTION

The magnitude of the internal shear force in lbs at point C most nearly is

(A) 50
(B) 250
(C) 300
(D) 500

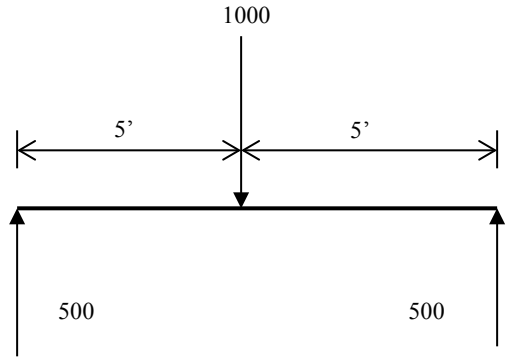


HINT

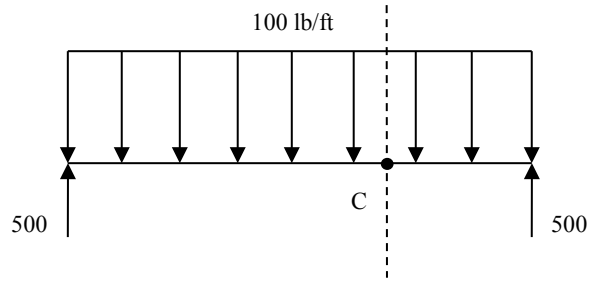
Find at least one of the support reactions. To do this reduce the distributed load to a concentrated load and apply equations of equilibrium.

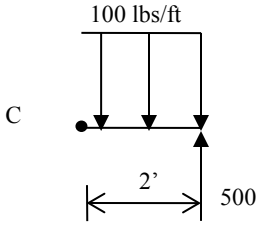
SOLUTION

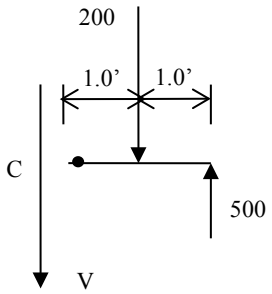
Find at least one of the support reactions. To do this reduce the distributed load to a concentrated load and apply equations of equilibrium.



Note: Common mistake is to cut beam with distributed load reduced, in which case the answer is 500. However, this is wrong. You must cut beam at C, and then reduce the load. Looking at right-half, we have:







Now apply equilibrium in y -direction to find

$$(+\downarrow)\sum F_y = 0$$
$$V + 200 - 500 = 0$$
$$V = 300$$

ANSWER
(C)

CONTRIBUTOR
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