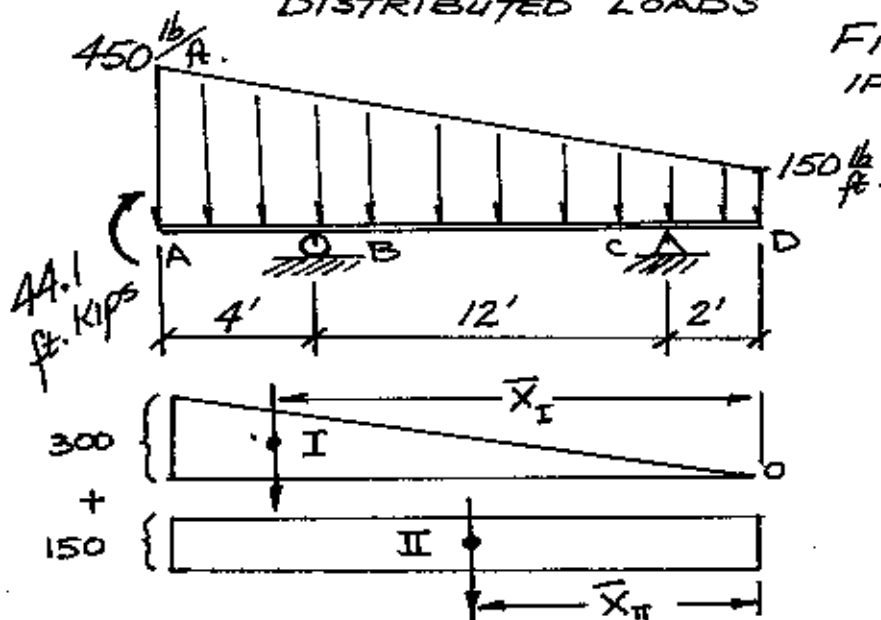


MECH 234 + 235  
DISTRIBUTED LOADS

PROB. 5-83



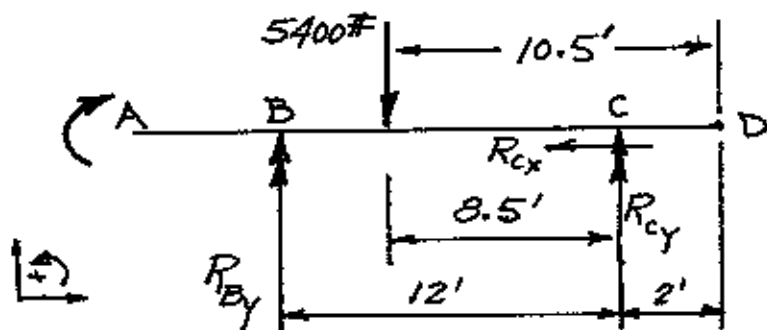
FIND REACTIONS  
IF  $w_0 = 150 \frac{\text{lb}}{\text{ft}}$

DETERMINE  
EQUIVALENT  
CONC. LOAD &  
PT. OF APPLIC.

CHOOSE RT. END  
AS REF. FOR  
CENTROIDS.

SECT.	AREA	$\bar{X}$	$A\bar{X}$
I	$\frac{1}{2}bh = \frac{1}{2}(18')(300\frac{\#}{\text{ft}}) = 2700\#$	$\frac{2}{3}(18') = 12'$	32400' #
II	$bh = (18')(150\frac{\#}{\text{ft}}) = 2700\#$	$\frac{1}{2}(18') = 9'$	24300' #
$\Sigma A = 5400\#$			$\Sigma A\bar{X} = 56700' \#$

from pt. D,  $x_c = \frac{\Sigma A\bar{X}}{\Sigma A} = \frac{56700' \#}{5400\#} = \boxed{\frac{10.5\text{ft.}}{5400\#}}$



$\Sigma F_x = 0 = R_{Cx}$  ✓  
 $\Sigma F_y = 0 = R_{By} + R_{Cy} - 5400\#$

$\Sigma M_c = 0 = -44,100' \# - R_{By}(12') + (5400\#)(8.5')$

$R_{By} = \frac{-44,100 + 45,900}{12} = \boxed{150 \text{ lb} = R_{By} \uparrow}$

$\therefore \boxed{R_{Cy} = 5250 \text{ lb.} \uparrow}$