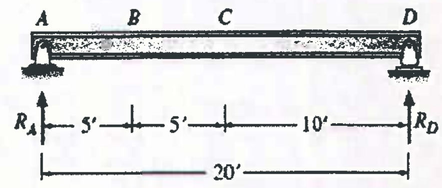
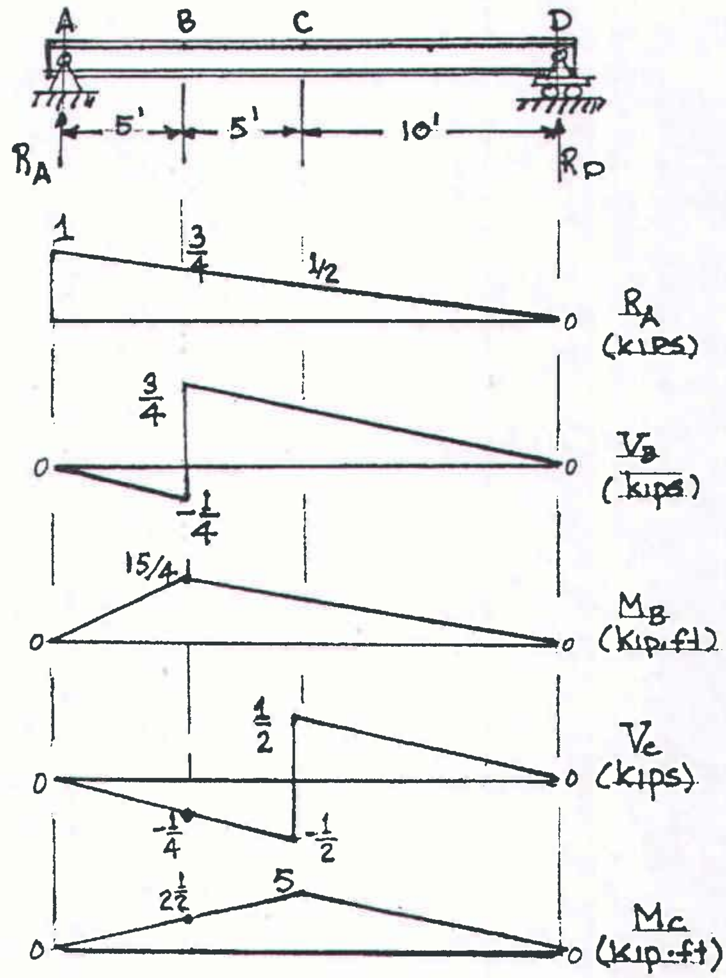
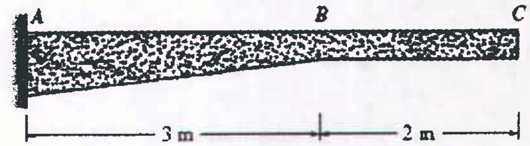
Draw the influence lines for the reaction at *A* and for the shear and moment at points *B* and *C*. The rocker at *D* is equivalent to a roller.



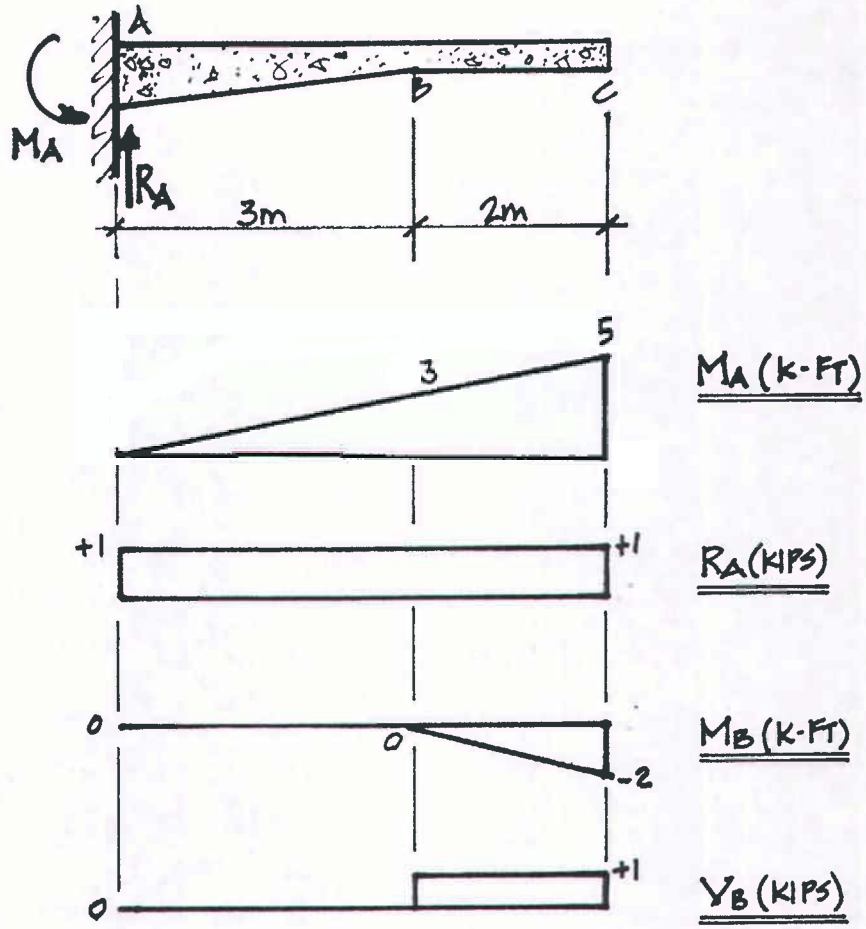
P8.1



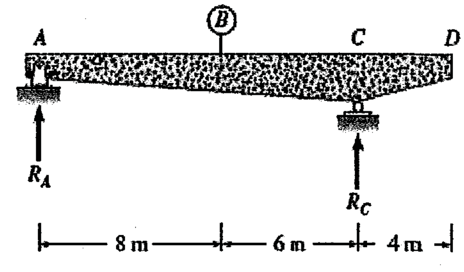
For the beam shown in Figure P8.2, draw the influence lines for the reactions M_A and R_A and the shear and moment at point B.



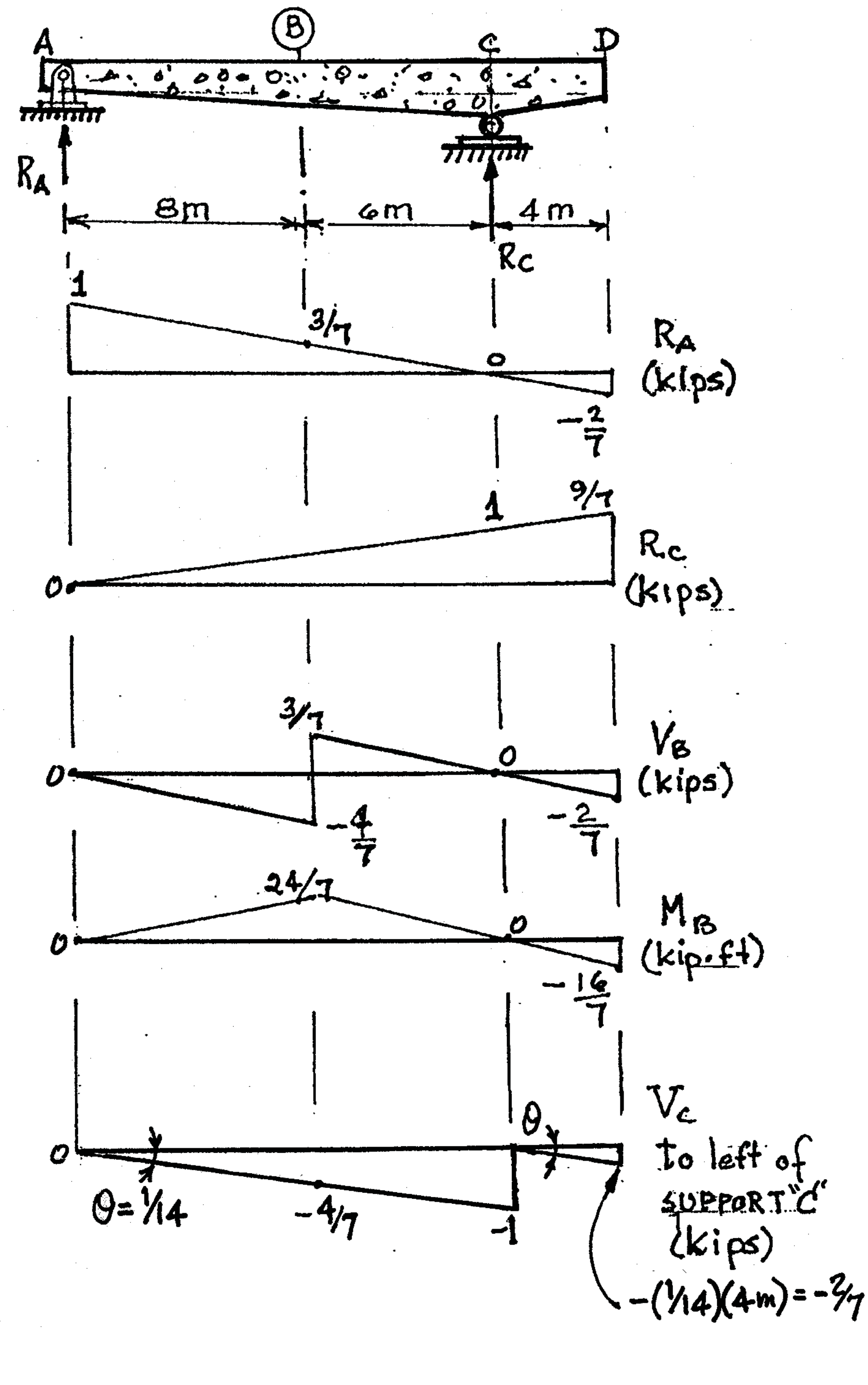
P8.2



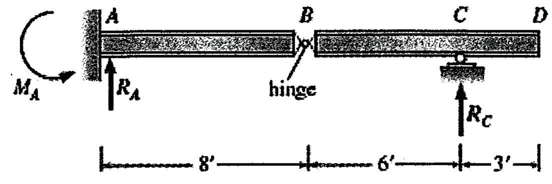
Draw the influence lines for the reactions at supports A and C, the shear and moment at section B, and the shear just to the left of support C.



P8.3

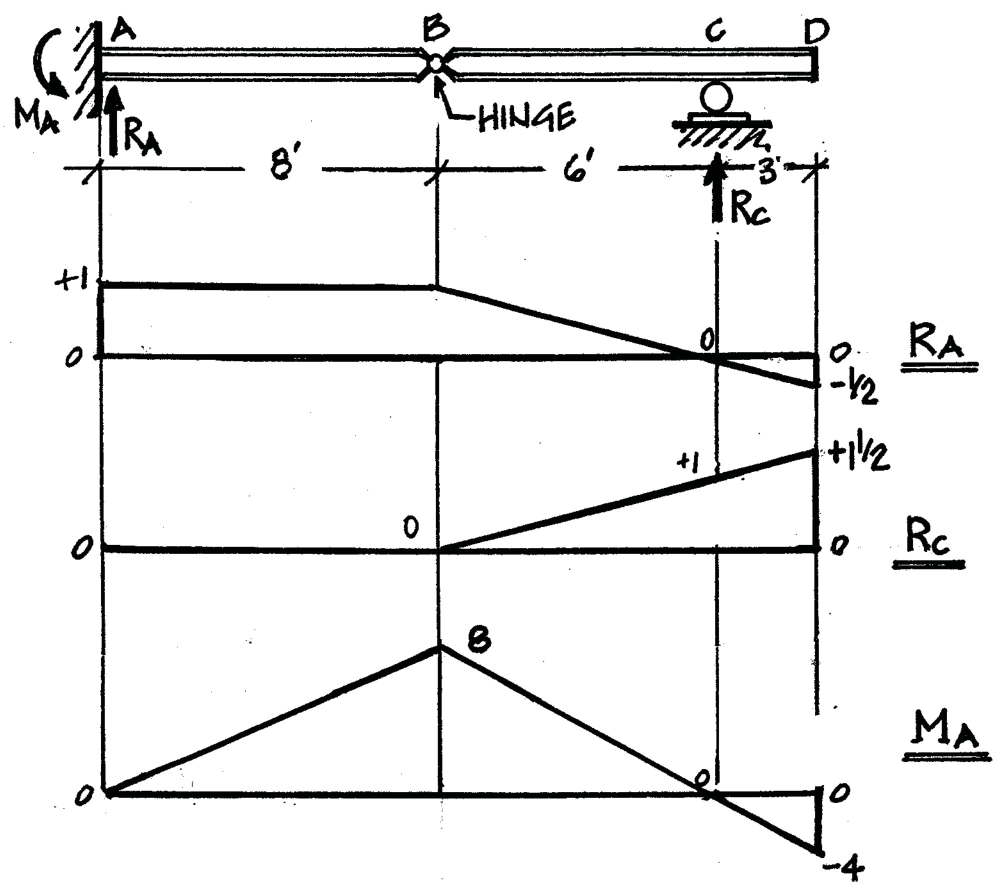


(*a*) Draw the influence lines for reactions M_A, R_A, and R_C of the beam in Figure P8.4. (*b*) Assuming that the span can be loaded with a 1.2 kips/ft uniform load of variable length, determine the maximum positive and negative values of the reactions.



P8.4

(a.)



(b.)

UNIFORM LOAD OF VARIABLE LENGTH 1.2 k/FT.

$+R_A\ MAX. = [1(8)+\frac{1}{2}(1)(6)]\ 1.2\ k/FT. = +13.2^k$

$+R_C\ MAX. = \frac{1}{2}(1.5(9))\ 1.2\ k/FT. = +8.1^k$

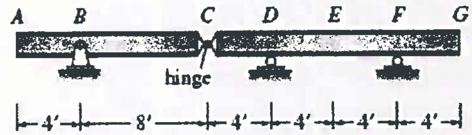
$+M_A\ MAX. = \frac{1}{2}(+8)(14')\ 1.2\ k/FT. = +67.2^{FT \cdot k}$

$-R_A\ MAX. = (-\frac{1}{2})(\frac{1}{2})(3)\ 1.2\ k/FT. = -0.9^k$

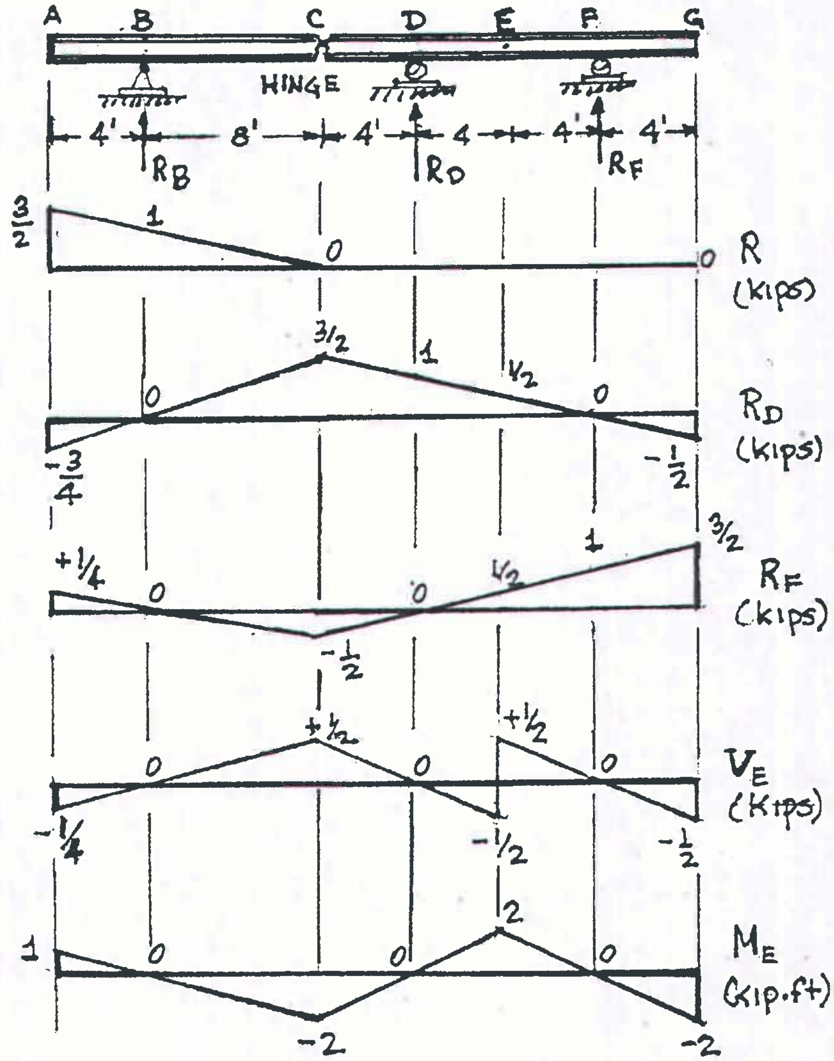
$-R_C\ MAX. = 0$

$-M_A\ MAX. = \frac{1}{2}(-4)(3)\ 1.2\ k/FT = -7.2\ FT \cdot k$

(*a*) Draw the influence lines for reactions R_B, R_D, and R_F of the beam in Figure P8.5 and the shear and moment at *E*. (*b*) Assuming that the span can be loaded with a 1.2 kips/ft uniform load of variable length, determine the maximum positive and negative values of the reactions.



P8.5



REACTIONS PRODUCED BY $W = 1.2$ kips/ft

$R_B = WA = 1.2 \text{ kips/ft} \left(\frac{1}{2}\, 12' \times 3/2\right) = \underline{10.8 \text{ kips}} \uparrow$

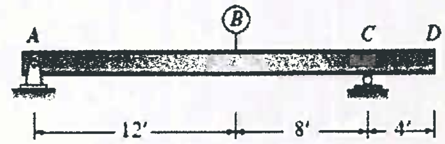
$R_D = 1.2\left[\frac{1}{2}\left(-\frac{3}{4}\right)4\right] + 1.2\left[\frac{1}{2} \times 4\left(-\frac{1}{2}\right)\right] = \underline{-3 \text{ kips}} \downarrow$

$1.2\left[\frac{1}{2}\left(\frac{3}{2}\right)20\right] = \underline{18 \text{ kips}} \uparrow$

$R_F = 1.2\left(\frac{1}{2} \times 12 \times \left(-\frac{1}{2}\right)\right) = \underline{-3.6 \text{ kips}} \downarrow$

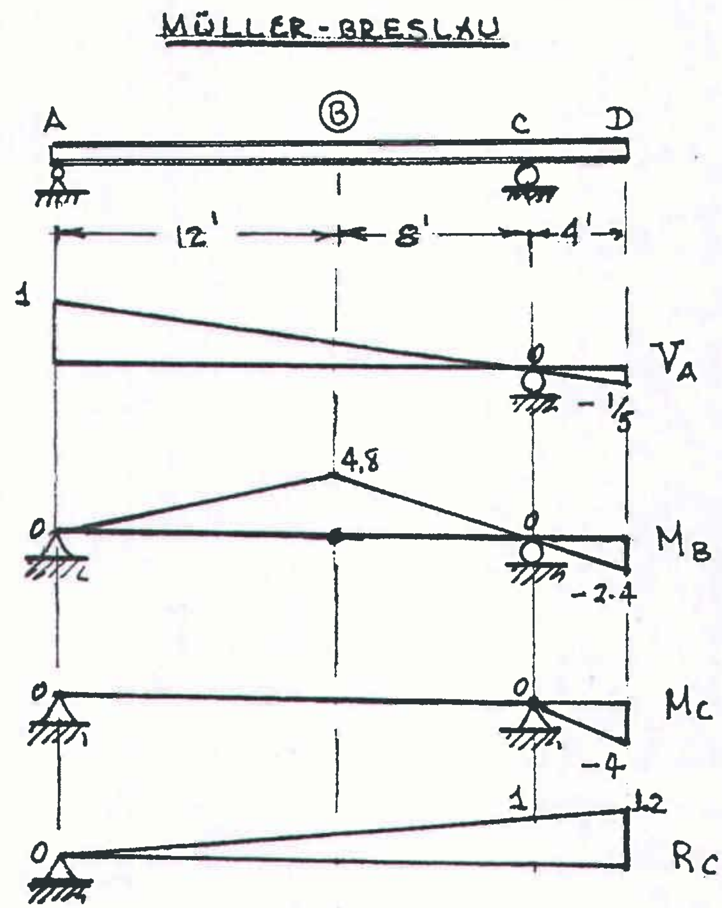
$1.2\left(\frac{1}{4} \times \frac{1}{2} \times 4\right) + 1.2\left(12 \times \frac{3}{2} \times \frac{1}{2}\right) = \underline{11.4 \text{ kips}} \uparrow$

Using the Müller–Breslau principle, sketch the shape of the influence lines for the reactions and internal forces noted below each structure.

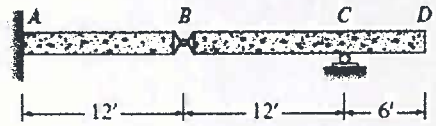


V_A, M_B, M_C, and R_C

P8.8



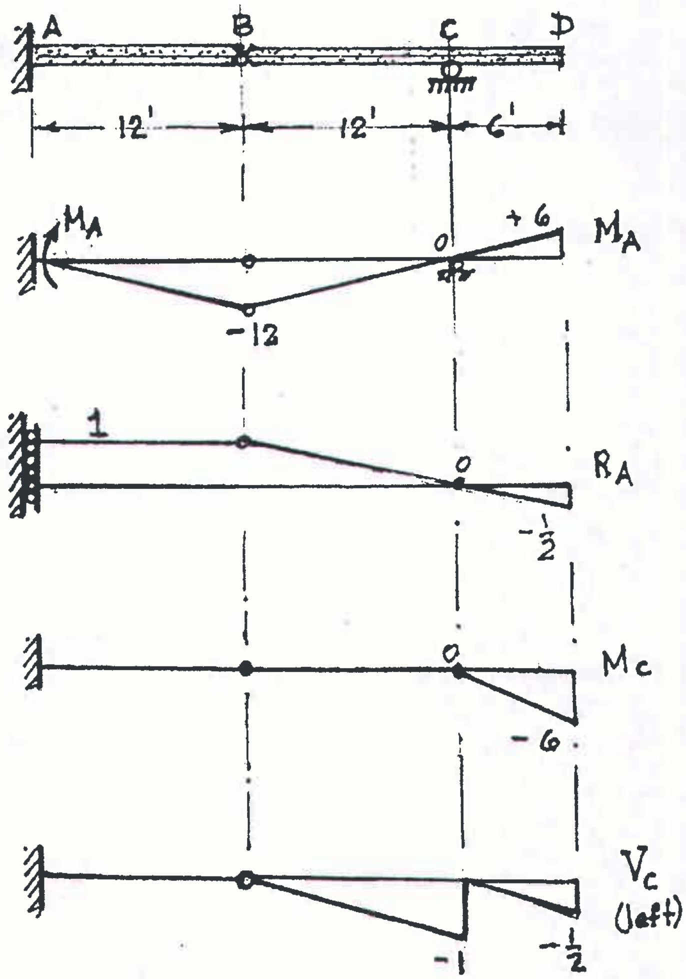
Using the Müller–Breslau principle, sketch the shape of the influence lines for the reactions and internal forces noted below each structure.



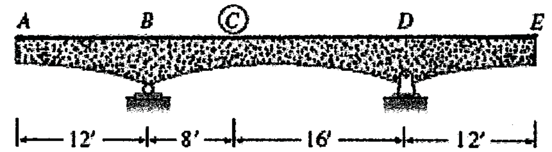
M_A, R_A, M_C, and V_C (to left of support C)

P8.9

MÜLLER–BRESLAU

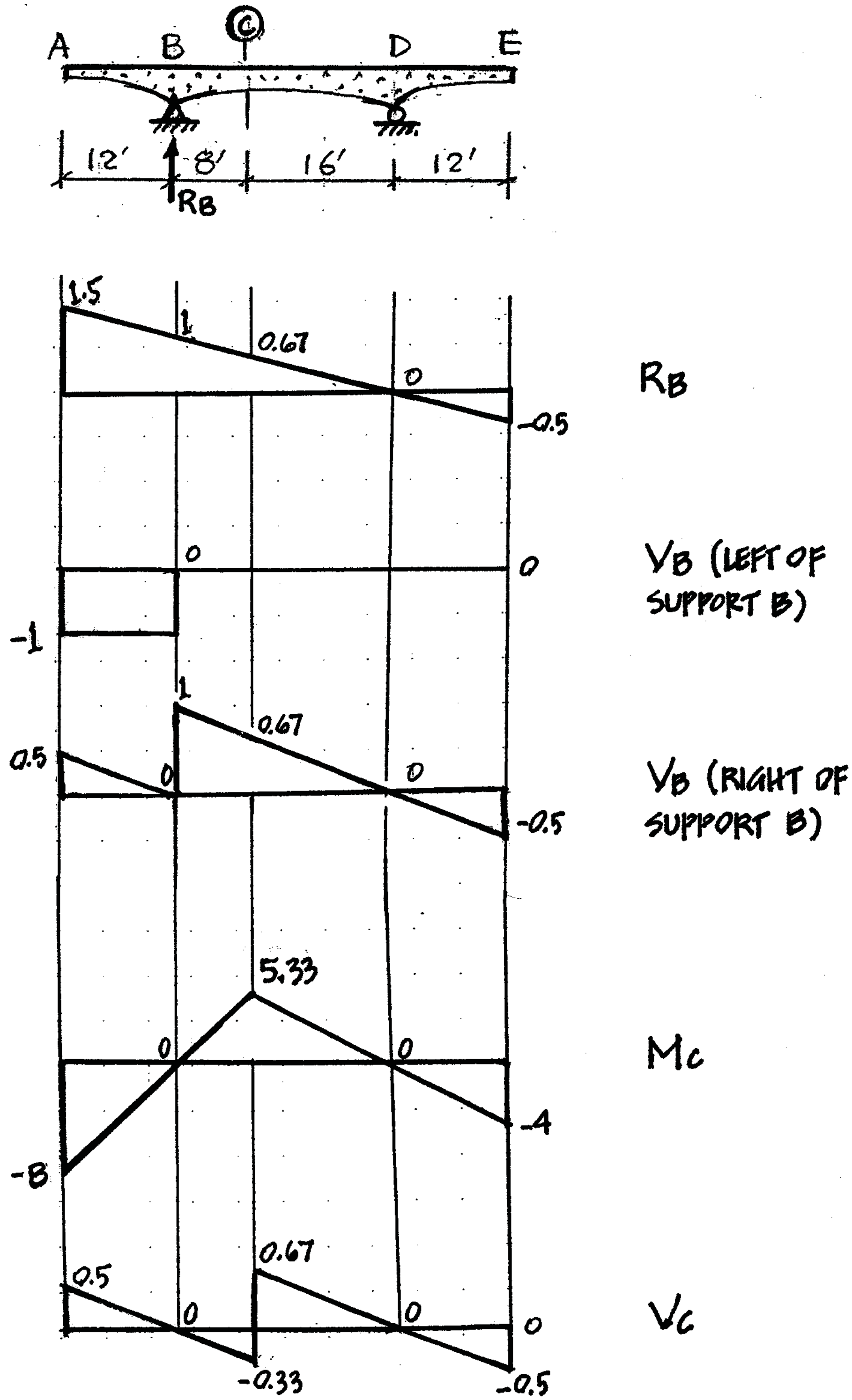


Using the Müller–Breslau principle, sketch the shape of the influence lines for the reactions and internal forces noted below each structure.

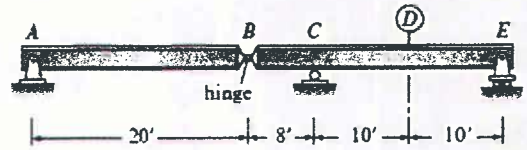


R_B, V_B (to left of support B), V_B (to right of support B), M_C, and V_C

P8.10

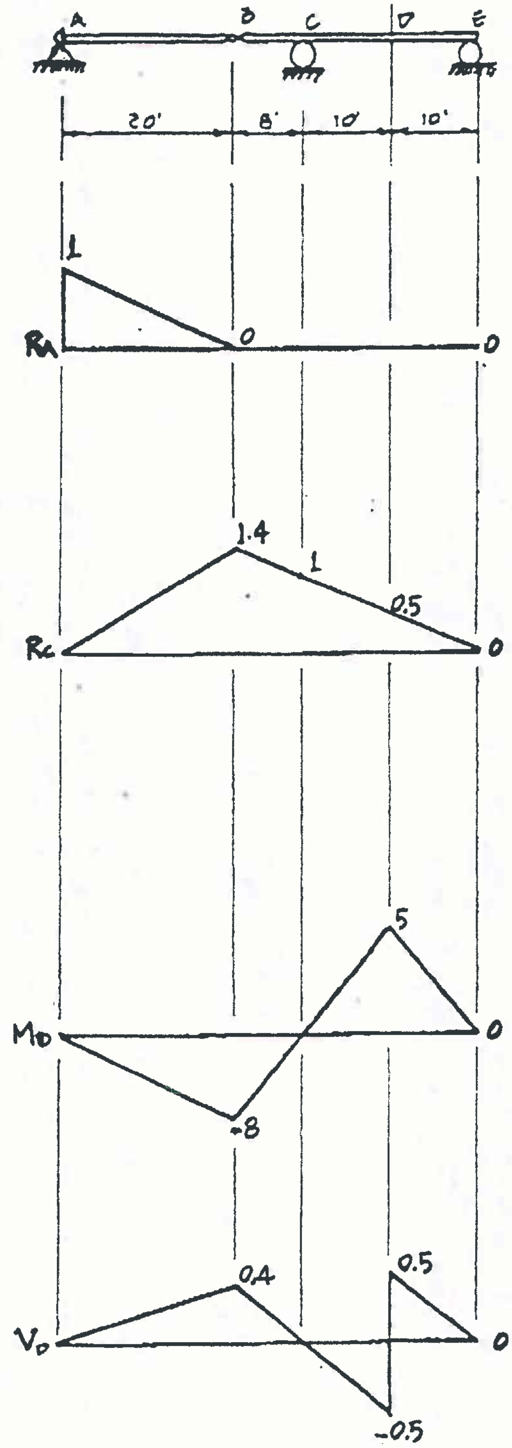


Using the Müller–Breslau principle, sketch the shape of the influence lines for the reactions and internal forces noted below each structure.

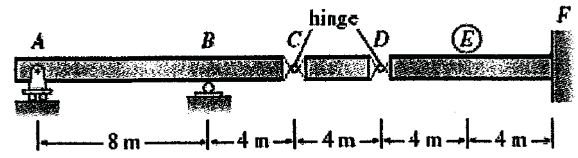


R_A, R_C, M_D, and V_D

P8.11



For the beam shown in Figure P8.12, draw the influence lines for the reactions at *A*, *B*, and *F*, the end moment at *F*, shears to the left and right of support *B*, and shear at *E*.



P8.12