$kip := 1000 \cdot lbf$ $\qquad MPa := 10^6 \cdot Pa$ $\qquad ORIGIN := 1$

$P := 6 \cdot kip$ $\qquad L := 10 \cdot ft$ $\qquad I := 10000 \cdot cm^4$ $\qquad E := 200000 \cdot MPa$

$$M(x, M_1, R_1, R_2) := M_1 + R_1 \cdot x + R_2 \left(\begin{vmatrix} x - L & \text{if } x > L \\ 0 & \text{otherwise} \end{vmatrix} \right) + (-P) \cdot \begin{vmatrix} x - \frac{L}{2} & \text{if } x > \frac{L}{2} \\ 0 & \text{otherwise} \end{vmatrix}$$

$$V(x, M_1, R_1, R_2) := \frac{d}{dx} M(x, M_1, R_1, R_2)$$

$$Slope(X, M_1, R_1, R_2) := \frac{1}{E \cdot I} \cdot \int_{0 \cdot ft}^{X} M(x, M_1, R_1, R_2)\, dx$$

slope at left support is implicitly set zero

so we can't use the slope and deflection and slope at left support as conditions, we have used them implicitly in the definition of Slope and Deflection that so get a true value directly for the retained variables

$$\delta(X, M_1, R_1, R_2) := \int_{0 \cdot ft}^{X} Slope(x, M_1, R_1, R_2)\, dx$$

deflection at left support is implicitly set zero

$M_1 := 10 \cdot ft \cdot kip$ $\qquad R_1 := 1 \cdot kip$ $\qquad R_2 := 2 \cdot kip$

unwarranted guesses to feed the solution algorithm

Given

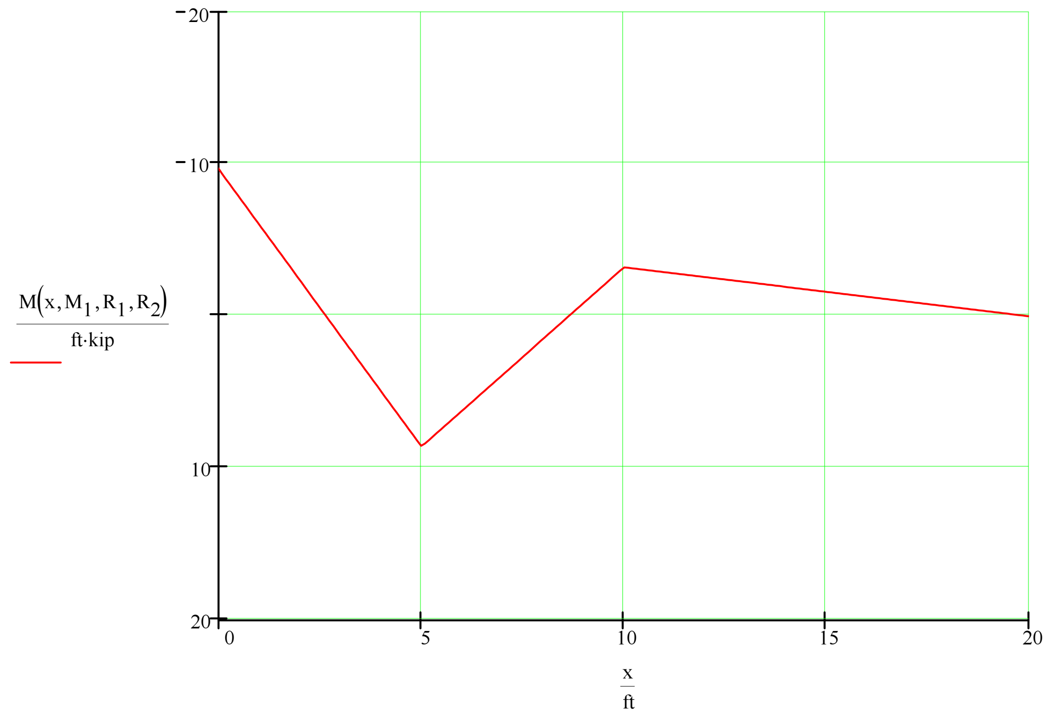
$\delta(L, M_1, R_1, R_2) = 0 \cdot ft$ $\qquad \delta(2 \cdot L, M_1, R_1, R_2) = 0 \cdot ft$ $\qquad M(2 \cdot L, M_1, R_1, R_2) = 0 \cdot ft \cdot kip$

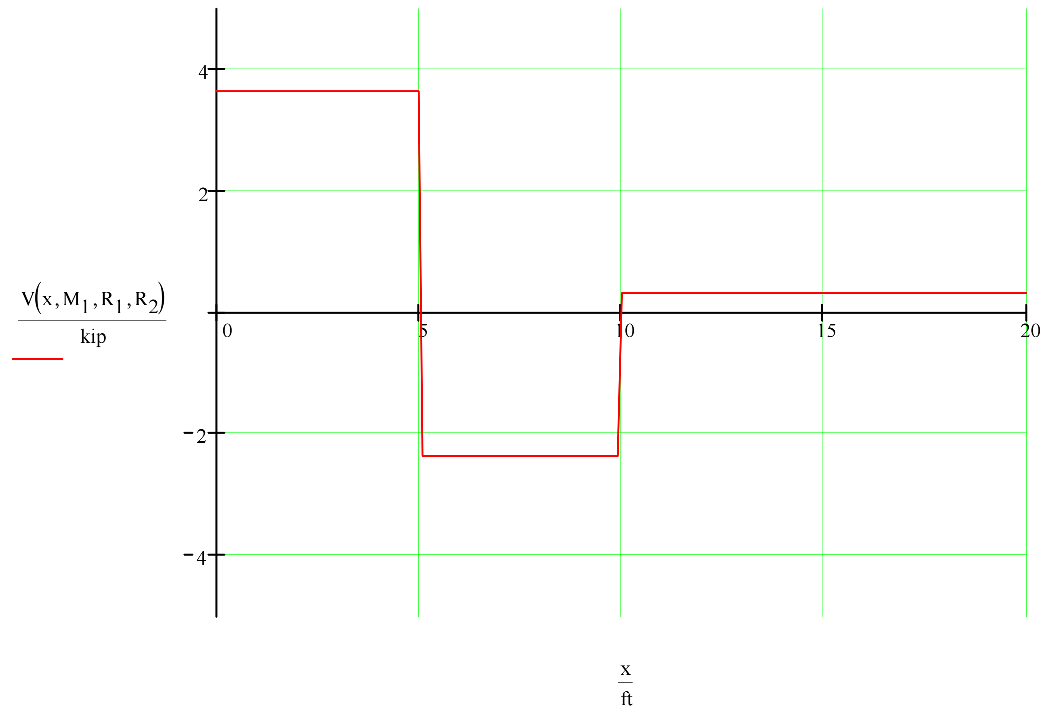
$Result := find(M_1, R_1, R_2)$

$M_1 := Result_1$ $\qquad R_1 := Result_2$ $\qquad R_2 := Result_3$

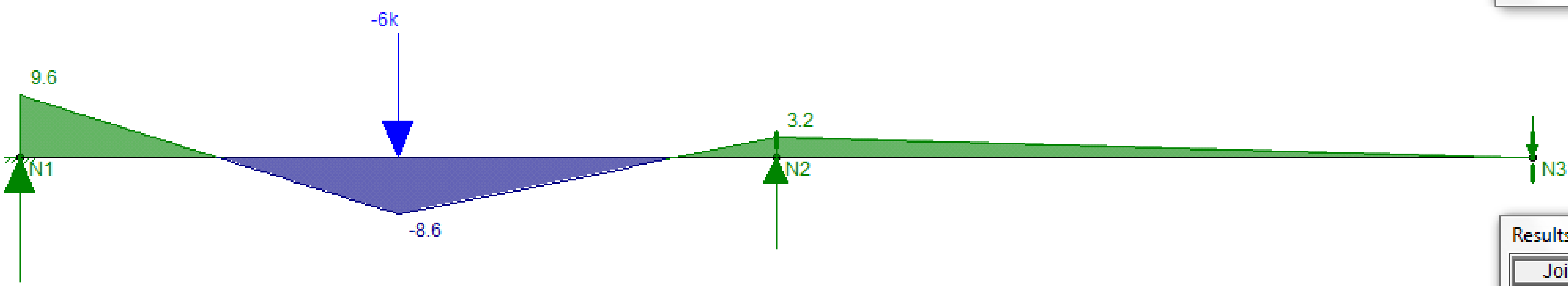
$M_1 = -9.642\, ft \cdot kip$ $\qquad R_1 = 3.643\, kip$ $\qquad R_2 = 2.679\, kip$

$R_3 := P - R_1 - R_2$ $\qquad R_3 = -0.322\, kip$


20
10
10
20
0
5
10
15
20
M(x, M1, R1, R2) / ft·kip
x / ft


4
2
-2
-4
0
5
10
15
20
V(x, M1, R1, R2) / kip
x / ft

Model View



Data Entry

- Project Grid
- Materials
- Section Sets
- Member Design Rules
- Wall Design Rules
- Seismic Design Rules
- Joint Coordinates
- Boundary Conditions
- Diaphragms
- Members
- Plates
- Wall Panels
- Basic Load Cases
- Moving Loads
- Load Combinations

Joint Reactions (By Combination)

	L...	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N2	0	2.679	NC	0	0	0
2	1	N3	0	-.321	NC	0	0	0
3	1	N1	0	3.643	0	0	0	9.643
4	1	Totals:	0	6	0			
5	1	COG (ft):	NC	NC	NC			

Results

- Joint Reactions
- Joint Deflections
- Story Drift
- Member Forces
- Member Stresses
- Member Torsion
- Member Deflections
- Suggested Shapes
- Design Results
- Seismic Detailing
- Concrete Reinforcing
- Plate Stresses
- Plate Forces
- Plate Corner Forces
- Solid Stresses
- Solid Principals
- Wall Panel Design
- Material TakeOff
- Frequencies
- Mode Shapes

Loads: BLC 1,
Results for LC 1,
Member z Bending Moments (k-ft)
Y-direction Reaction units are k and k-ft