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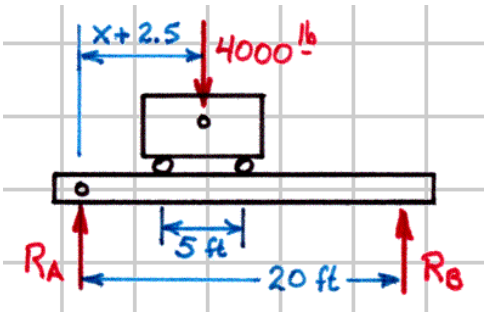
(a) From a free-body diagram of the complete beam, the equations of equilibrium give

$$\circlearrowleft \Sigma M_A = 0: \qquad 20R_B - (x+2.5)(4000) = 0$$

$$\uparrow \Sigma F_y = 0: \qquad R_A + R_B - 4000 = 0$$

$$R_B = 200(x+2.5) = (200x+500) \text{ lb}$$

$$R_A = (3500 - 200x) \text{ lb}$$

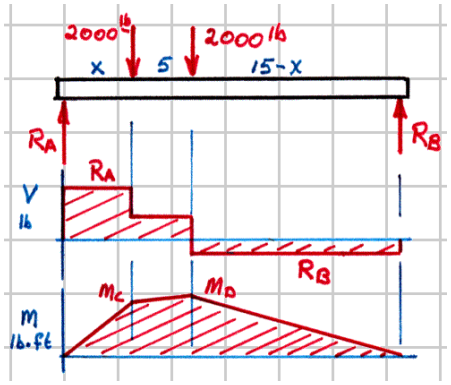


Load, shear force, and bending moment diagrams are as shown. The moment under the left wheel is

$$M_C = xR_A = (3500x - 200x^2) \text{ lb} \cdot \text{ft}$$

and the moment under the right wheel is

$$M_D = (15-x)R_B = (15-x)(200x+500) \text{ lb} \cdot \text{ft}$$



These moments are graphed below. Notice that the maximum moment occurs under the right wheel when $0 \le x \le 7.5$ m (and the right wheel is closer to the center of the beam) and under the right wheel when $7.5 \le x \le 15$ m (and the left wheel is closer to the center of the beam).

(b) The graph of maximum moment is also shown below.