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

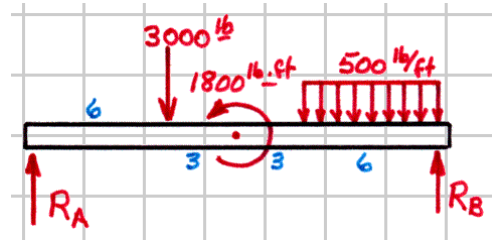
$$\uparrow \Sigma F_y = 0: \quad R_A + R_B - 3000 - 500(6) = 0$$

$$\curvearrowright \Sigma M_B = 0:$$

$$[500(6)](3) + 3000(12) + 1800 - 18R_A = 0$$

$$R_A = 2600 \text{ lb} \quad \text{..... Ans.}$$

$$R_B = 3400 \text{ lb} \quad \text{..... Ans.}$$



- (b) Next, from a free-body diagram of the left end of the beam, the equations of equilibrium give

$$\uparrow \Sigma F_y = 0: \quad (2600) - 3000 - V = 0$$

$$\curvearrowright \Sigma M_{cut} = 0: \quad M + 1800 + 3000(4) - (2600)(10) = 0$$

$$V = -400 \text{ lb} \quad \text{..... Ans.}$$

$$M = 12,200 \text{ lb} \cdot \text{ft} \quad \text{..... Ans.}$$

