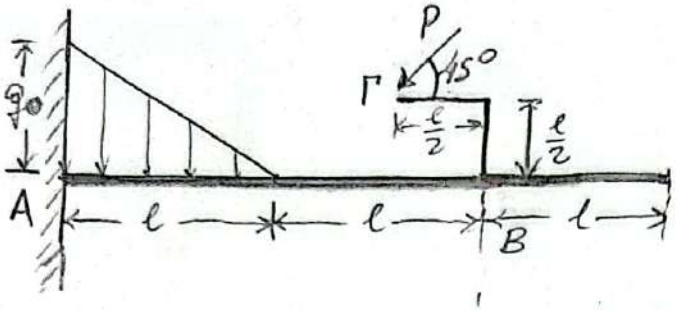
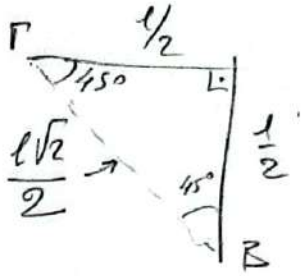
36η ΑΣΚΗΣΗ

Να υπολογιστούν οι αντιδράσεις στήριξης του πλαισίου

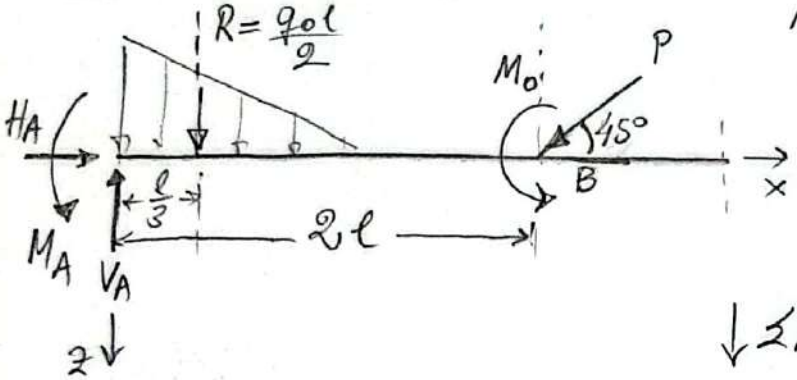


Λύση



$$B\Gamma = \sqrt{2\cdot\frac{\ell^2}{4}} = \frac{\ell\sqrt{2}}{2}$$

Αντικαθιστούμε το P στο B, και ΔΕΣ



$$M_0 = \frac{P\ell\sqrt{2}}{2}$$

Ισορροπία

$$\rightarrow \Sigma F_x = 0 \Rightarrow \boxed{H_A = P\frac{\sqrt{2}}{2}} \quad (\cos 45^\circ)$$

$$\downarrow \Sigma M_z = 0 \Rightarrow V_A = R + P\frac{\sqrt{2}}{2} \quad (\sin 45^\circ) \Rightarrow$$

$$\boxed{V_A = \frac{q_0\ell}{2} + P\frac{\sqrt{2}}{2}}$$

$$\circlearrowleft \Sigma M_A = 0 \Rightarrow M_A + M_0 - \frac{1}{3}\frac{q_0\ell}{2} - 2\ell P\frac{\sqrt{2}}{2} \quad (\sin 45^\circ) = 0 \Rightarrow$$

$$\Rightarrow M_A = \frac{q_0\ell}{6} + P\ell\sqrt{2} - \frac{P\ell\sqrt{2}}{2} \Rightarrow \boxed{M_A = \frac{q_0\ell}{6} + \frac{P\ell\sqrt{2}}{2}}$$