

解 答

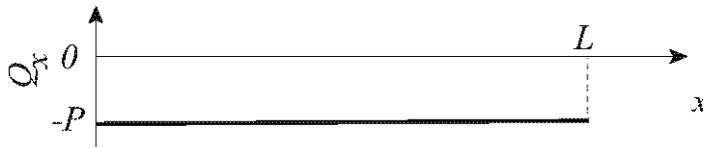
2025	科目名	知的システム：材料力学
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問 1

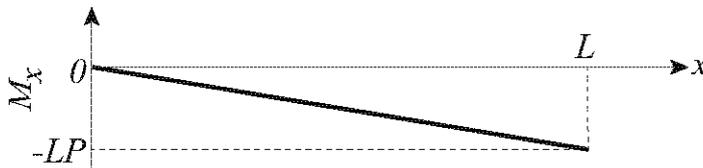
1. $N_1 = \frac{V_A}{\cos \theta}, \quad N_2 = P - 2V_A, \quad N_3 = \frac{V_A}{\cos \theta}$
2. $U = \frac{L}{2AE} \left(\frac{2V_A^2}{\cos^2 \theta} + (P^2 - 4PV_A + 4V_A^2) \cos \theta \right)$
3. $V_A = \frac{P \cos^3 \theta}{1 + 2 \cos^3 \theta}$
4. $\delta_y = \frac{LP \cos \theta}{AE(1 + 2 \cos^3 \theta)}$

問 2

1. $Q_x = -P$



2. $M_x = -Px$



3. $y = \frac{P}{EI} \left(\frac{1}{6}x^3 - \frac{1}{2}L^2x + \frac{1}{3}L^3 \right)$
4. $(L, 0)$