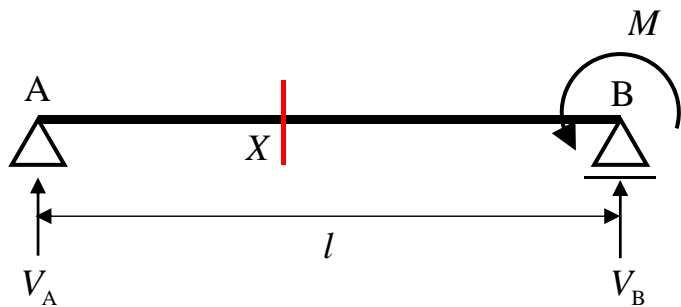




不静定力学I

静定力学の復習

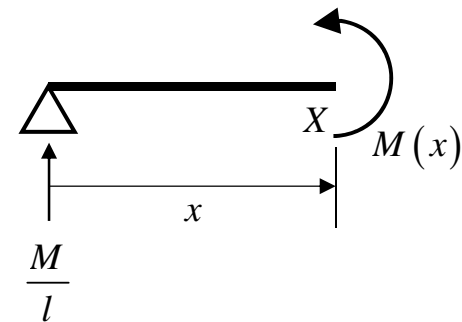
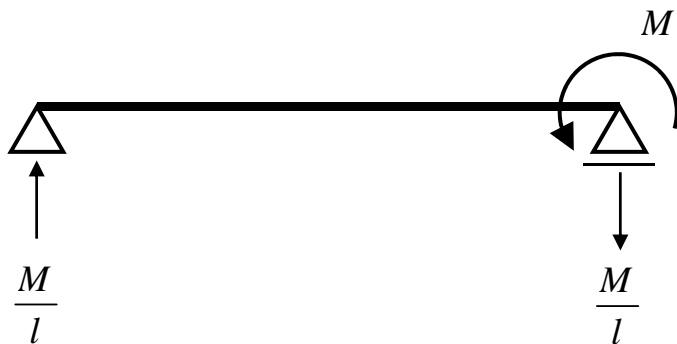
演習問題[1]



反力の計算

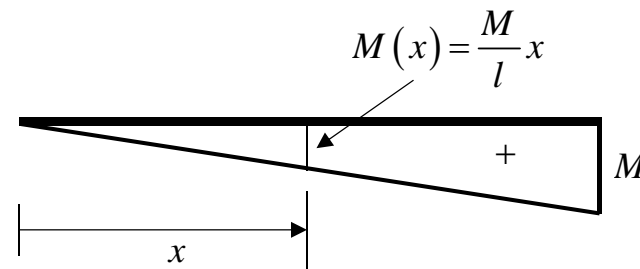
$$\sum M_A = 0: -M - V_B l = 0 \rightarrow V_B = -\frac{M}{l}$$

$$\sum Y = 0: V_A + V_B = 0 \rightarrow V_A = \frac{M}{l}$$

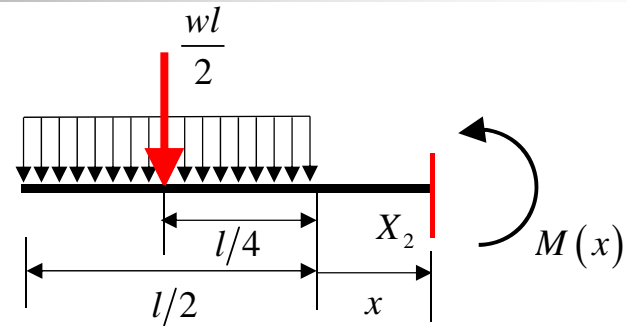
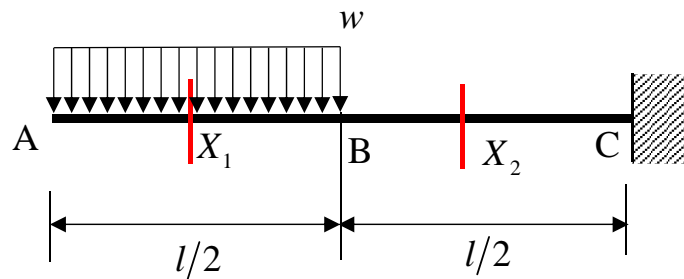


曲げモーメント関数の計算

$$\sum M_x = 0: -M(x) + \frac{M}{l}x = 0 \rightarrow M(x) = \frac{M}{l}x$$

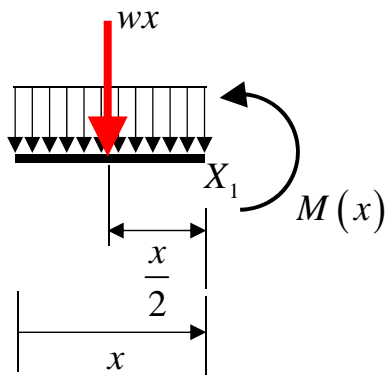


演習問題[2]



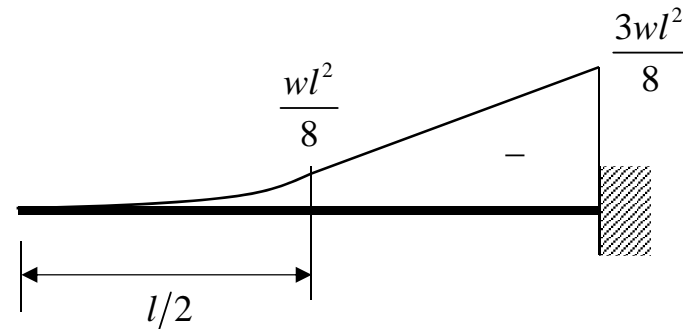
曲げモーメント関数の計算

$$\sum M_x = 0: -M(x) - \frac{wl}{2} \cdot \left(\frac{l}{4} + x\right) = 0 \rightarrow M(x) = -\frac{wl^2}{8} - \frac{wl}{2}x$$

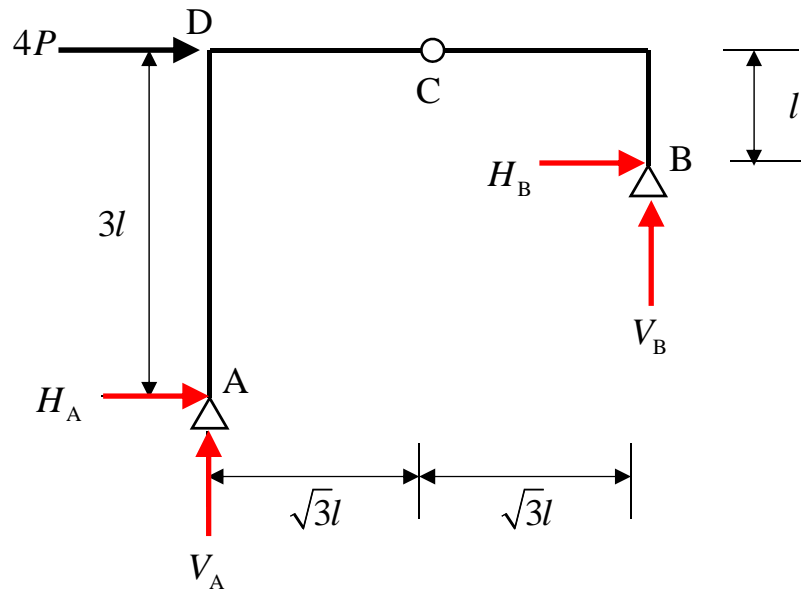


曲げモーメント関数の計算

$$\sum M_x = 0: -M(x) - wx \cdot \frac{x}{2} = 0 \rightarrow M(x) = -\frac{w}{2}x^2$$



演習問題[3]



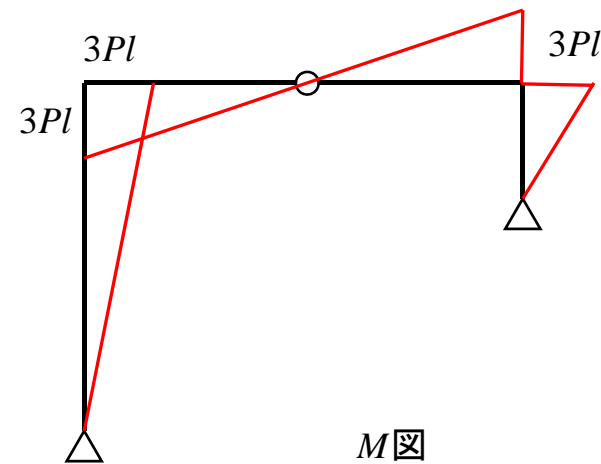
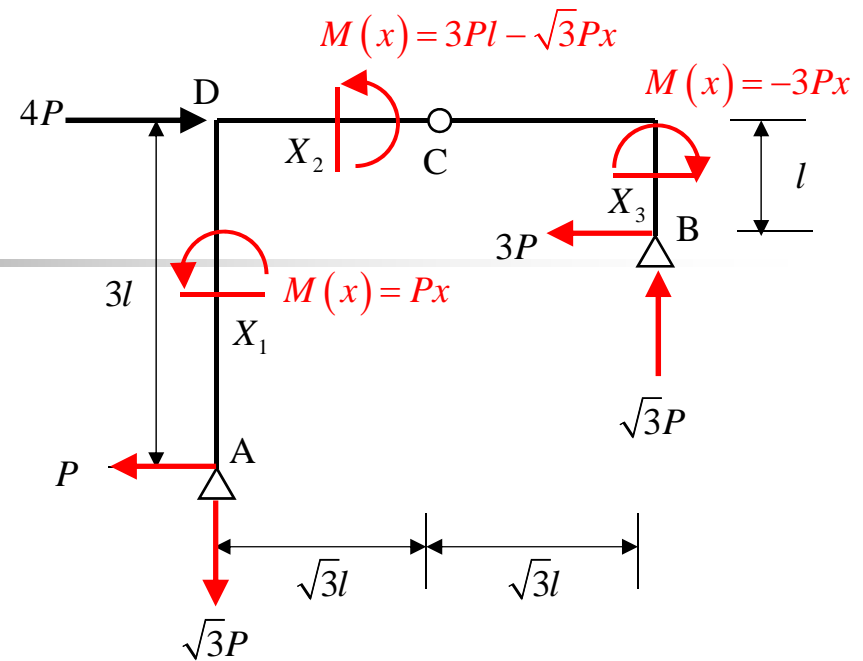
反力の計算

$$\sum X = 0: H_A + H_B + 4P = 0 \Rightarrow H_A = -P$$

$$\sum Y = 0: V_A + V_B = 0 \Rightarrow V_A = -\sqrt{3}P$$

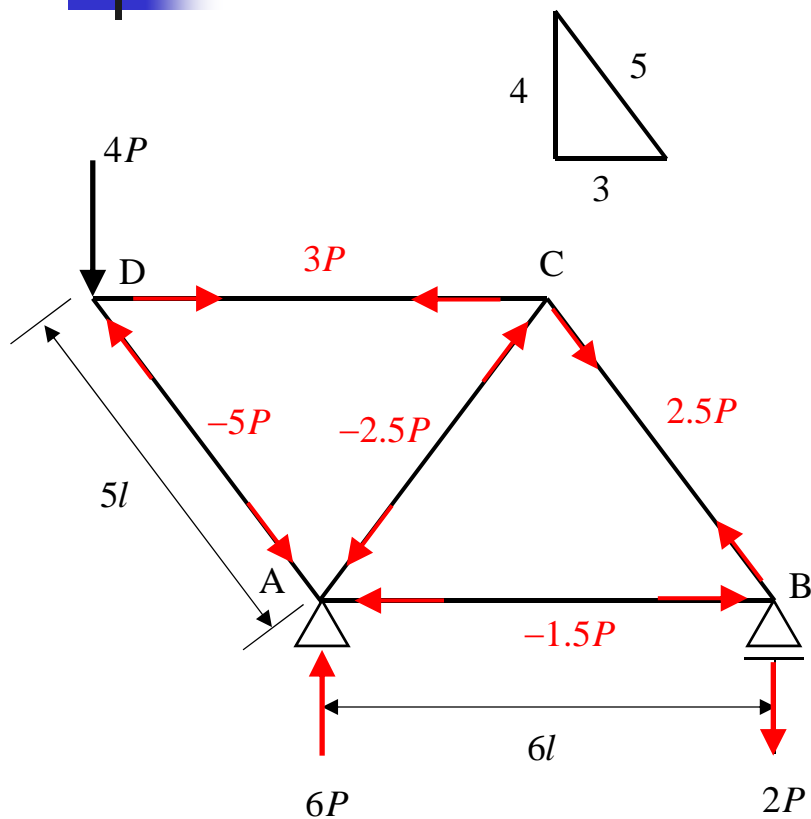
$$\sum M_A = 0: 4P \cdot 3l - V_B \cdot 2\sqrt{3}l + H_B \cdot 2l = 0 \Rightarrow V_B = \sqrt{3}P$$

$$\sum M_C^{\text{右}} = 0: -V_B \cdot \sqrt{3}l - H_B \cdot l = 0 \Rightarrow H_B = -\sqrt{3}V_B \Rightarrow H_B = -3P$$

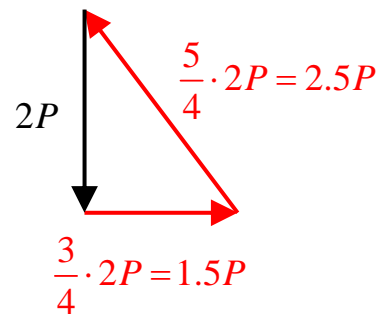


M图

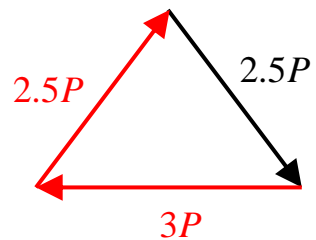
演習問題[4]



B点



C点



D点

