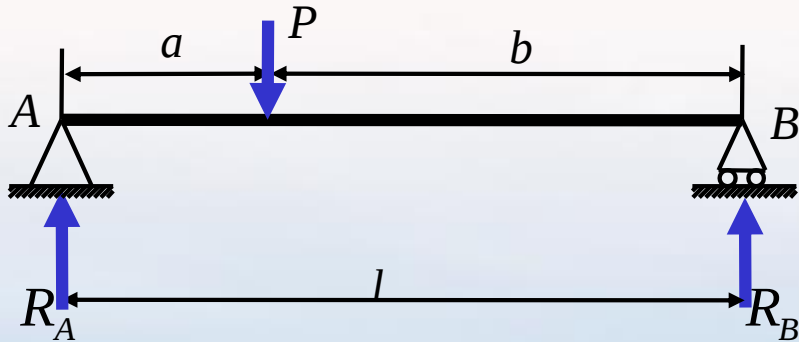


# 例题三



# 梁的弯曲

在简支梁上作用集中力 $P$ ，试列出梁的剪力、弯矩方程，并绘出 $Q$ 、 $M$ 图。



解:  $\sum m_B = 0, Pb - R_A l = 0$

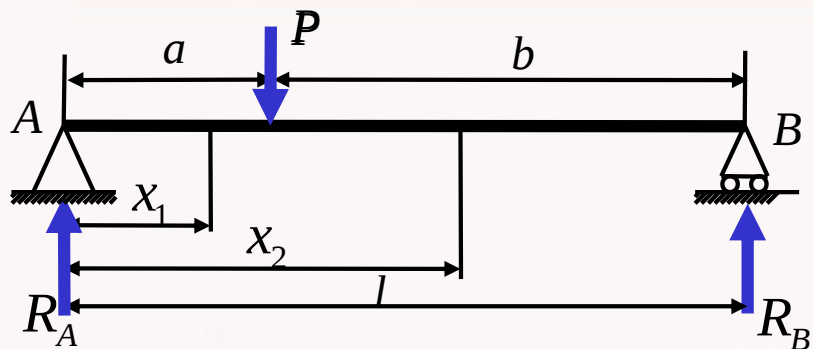
$$R_A = \frac{Pb}{l}$$

$$\sum m_A = 0, R_B l - Pa = 0$$

$$R_B = \frac{Pa}{l}$$



# 梁的弯曲

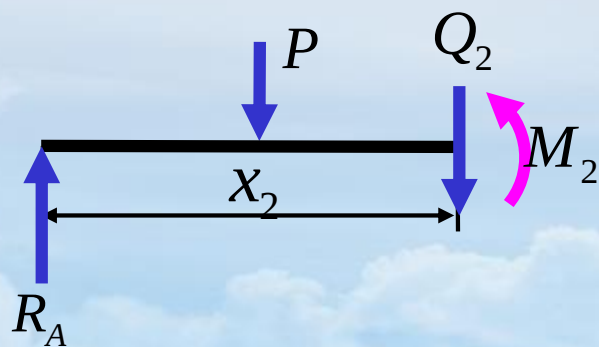
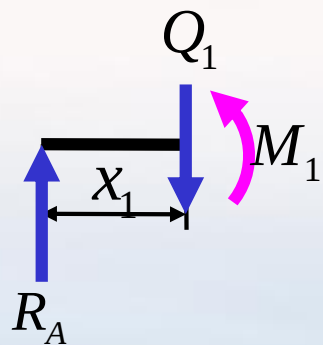


$$\sum F_y = 0, R_A - Q_1 = 0$$

$$Q_1 = R_A = \frac{Pb}{l}$$

$$\sum m_{o1} = 0, M_1 = R_A x_1 = \frac{Pb}{l} x_1$$

$(0 \leq x_1 \leq a)$



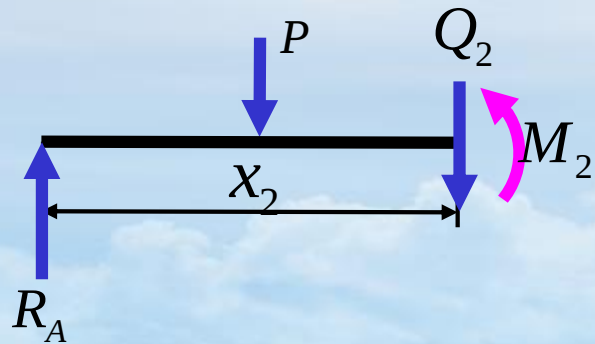
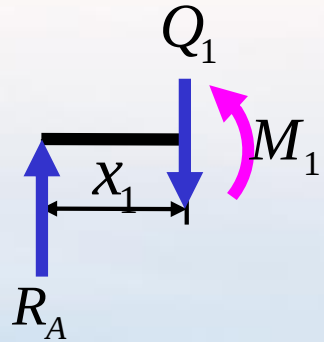
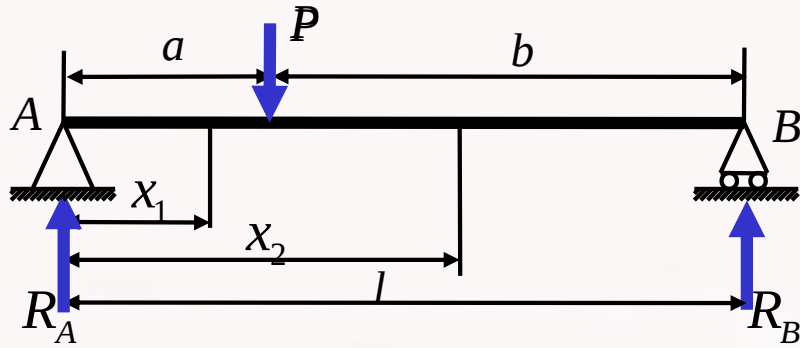
$$\sum F_y = 0, R_A - Q_2 - P = 0$$

$$Q_2 = R_A - P = -\frac{Pa}{l}$$

$(a \leq x_2 \leq l)$



# 梁的弯曲



$$\sum m_{o2} = 0,$$

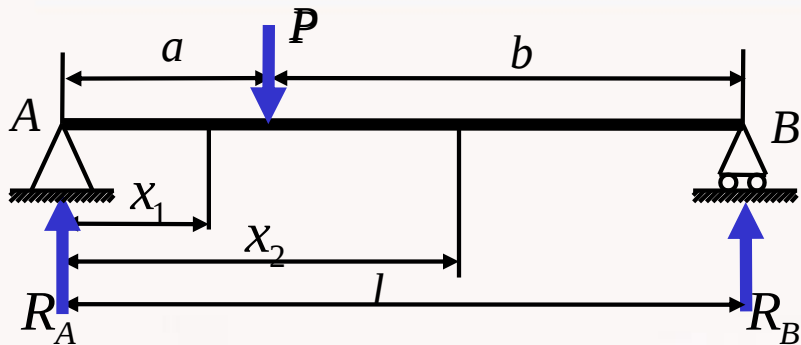
$$M_2 - R_A x_2 + P(x_2 - a) = 0$$

$$M_2 = R_A x_2 - P(x_2 - a)$$

$$(a \leq x_2 \leq l)$$



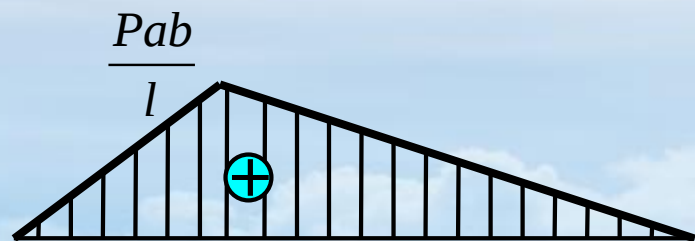
# 梁的弯曲



$$Q_1 = R_A = \frac{Pb}{l}$$
$$M_1 = R_A x_1 = \frac{Pb}{l} x_1 \quad (0 \leq x_1 \leq a)$$



Q图



M图

$$Q_2 = R_A - P = -\frac{Pa}{l}$$
$$M_2 = R_A x_2 - P(x_2 - a) \quad (a \leq x_2 \leq l)$$

