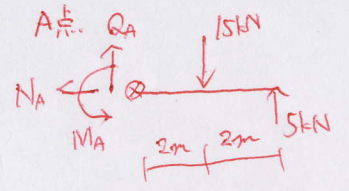
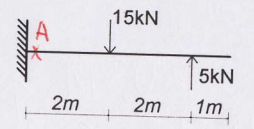


軸力図 (AFD)、せん断力図 (SFD)、曲げモーメント図 (BMD) を図中に描きなさい。
ただし各断面力が部材内ですべて0の場合は、0を図に書きなさい。

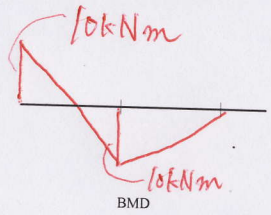
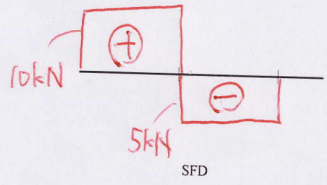
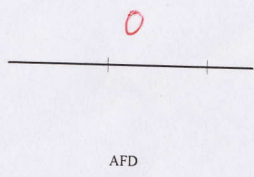
(1)



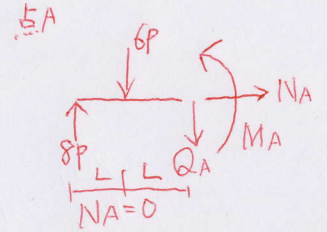
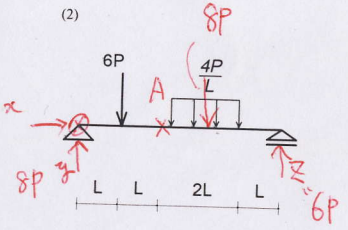
$$N_A = 0$$

$$Q_A - 15\text{kN} + 5\text{kN} = 0 \Rightarrow Q_A = 10\text{kN}$$

$$M_A - 30\text{kNm} + 20\text{kNm} = 0 \Rightarrow M_A = 10\text{kNm}$$



(2)



$$\sum X_i = x = 0$$

$$\sum Y_i = y + z - 14P = 0 \Rightarrow y = 8P$$

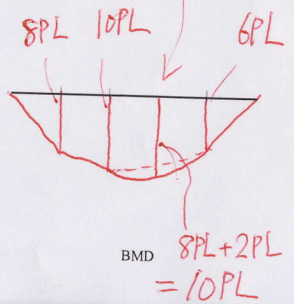
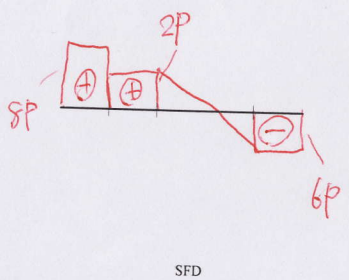
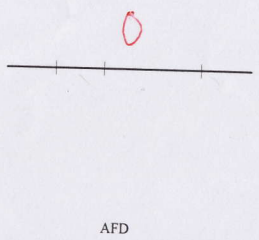
$$\sum M_i = 6PL + 24PL - 5ZL = 0 \Rightarrow 5Z = 30P \Rightarrow Z = 6P$$

$$Q_A = 2P$$

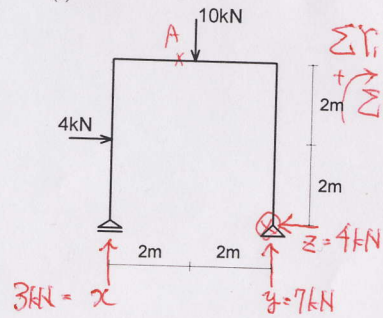
$$16PL - 6PL - M_A = 0 \Rightarrow M_A = 10PL$$

$$\frac{(10+6)PL}{2} = 8PL$$

$$\frac{\frac{2}{L} \times 4L^2}{8Z} = 2PL$$



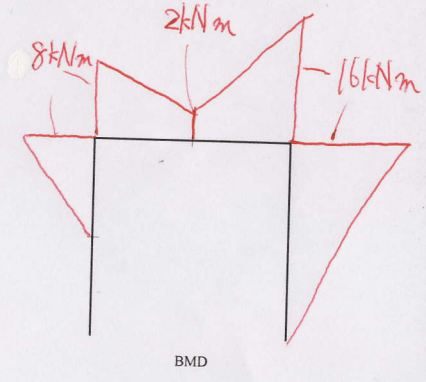
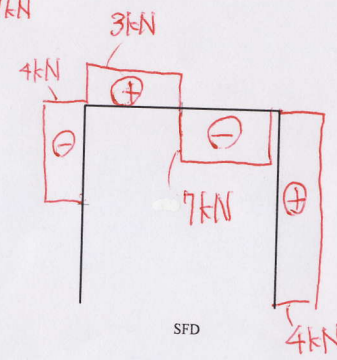
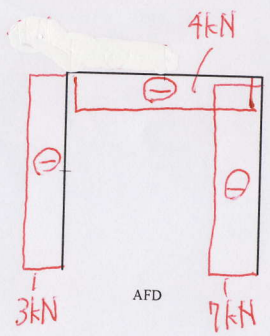
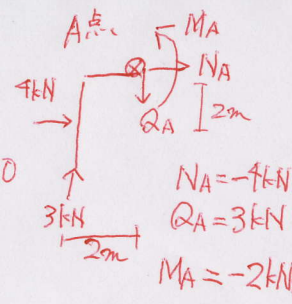
(3)



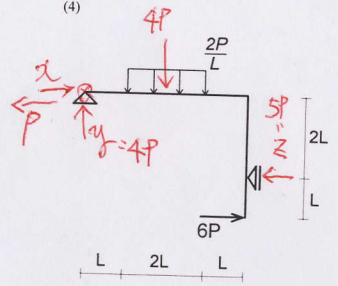
$$\sum X_i = z - 4\text{kN} = 0 \Rightarrow z = 4\text{kN}$$

$$\sum Y_i = x + y - 10\text{kN} = 0 \Rightarrow y = 7\text{kN}$$

$$\sum M_i = 8\text{kNm} + 4x\text{m} - 20\text{kNm} = 0 \Rightarrow 4x = 12\text{kN} \Rightarrow x = 3\text{kN}$$



(4)



$$\sum X_i = x - z + 6P = 0 \Rightarrow z = 5P$$

$$\sum Y_i = y - 4P = 0 \Rightarrow y = 4P$$

$$\sum M_i = 8PL + 2ZL - 18PL = 0$$

$$\frac{4PL + 8PL}{2} = 6PL$$

$$\frac{2P \times 4L^2}{8} = PL$$

