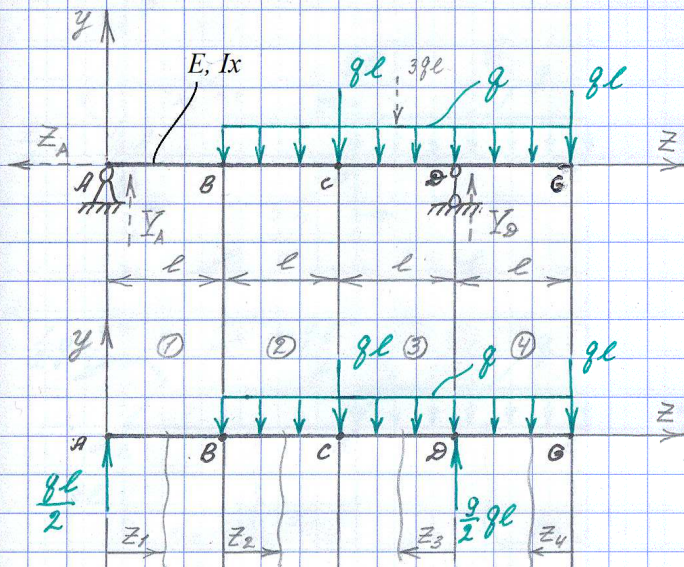


$$\theta_G = ?$$



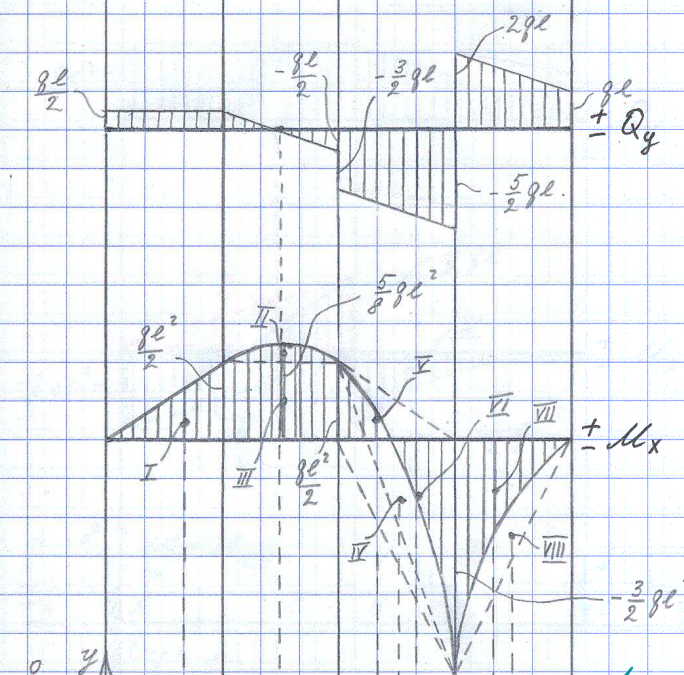
$$\sum F_z = 0 = -Z_A \Rightarrow Z_A = 0$$

$$\sum M_A = 0 = -q \cdot l \cdot 2l + Y_D \cdot 3l - q \cdot l \cdot 4l - 3q \cdot l \cdot \frac{5}{2} \cdot l$$

$$Y_D = \frac{9}{2} q l$$

$$\sum M_D = 0 = -Y_A \cdot 3l + q \cdot l \cdot l - q \cdot l \cdot l + 3q \cdot l \cdot \frac{l}{2}$$

$$Y_A = \frac{1}{2} q l$$

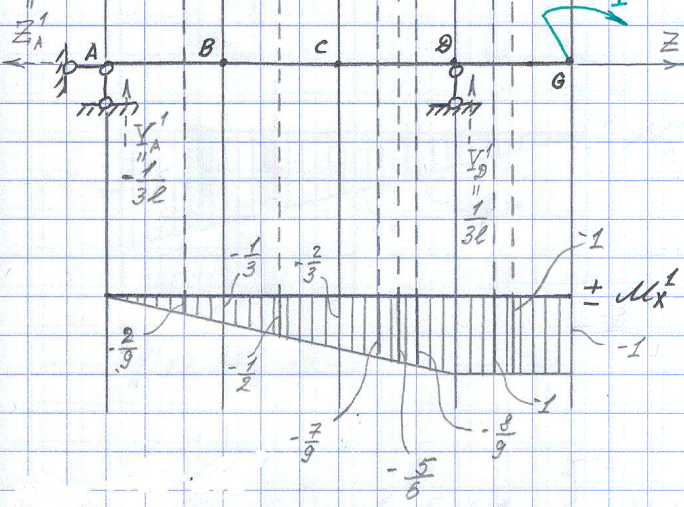
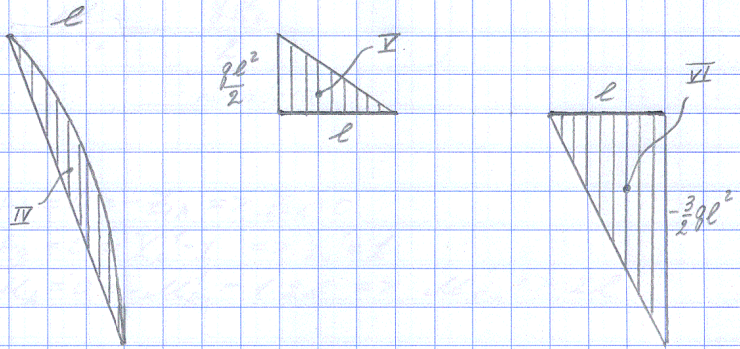


$$Q_{y1} = \frac{q l}{2}; \quad M_{x1} = \frac{1}{2} q l z_1;$$

$$Q_{y2} = \frac{q}{2} (l - 2z_2); \quad M_{x2} = \frac{q}{2} (l^2 + l z_2 - z_2^2);$$

$$Q_{y3} = z_3 - \frac{5}{2} q l; \quad M_{x3} = \frac{q}{2} (-z_3^2 + 5l z_3 - 3l^2);$$

$$Q_{y4} = q (l + z_4); \quad M_{x4} = q (-l z_4 - \frac{z_4^2}{2}).$$



$$\sum F_z = 0 = -Z_A' \Rightarrow Z_A' = 0$$

$$\sum M_A = 0 = Y_D' \cdot 3l - I \Rightarrow Y_D' = \frac{1}{3l}$$

$$\sum M_D = 0 = -Y_A' \cdot 3l - I \Rightarrow Y_A' = -\frac{1}{3l}$$

$$M_{x1} = -\frac{1}{3l} z_1; \quad M_{x2} = -\frac{1}{3l} (l + z_2);$$

$$M_{x3} = \frac{z_3}{3l} - I; \quad M_{x4} = -I.$$

$$\theta_G = \frac{M_x \cdot M_x'}{E J_x} = \frac{1}{E J_x} \left[ \left( \frac{1}{2} \frac{q l^2}{2} \cdot l \right) \left( -\frac{1}{9} \right) + \left( \frac{q l^3}{12} \right) \left( -\frac{1}{2} \right) + \left( l \frac{q l^2}{2} \right) \left( -\frac{1}{2} \right) + \left( \frac{q l^3}{12} \right) \left( -\frac{5}{6} \right) + \left( \frac{1}{2} l \frac{q l^2}{2} \right) \left( -\frac{7}{9} \right) + \left( -\frac{1}{2} l \frac{3}{2} q l^2 \right) \left( -\frac{8}{9} \right) + \left( -\frac{1}{2} l \frac{3}{2} q l^2 \right) \left( -1 \right) - \left( \frac{q l^3}{12} \right) \left( -1 \right) \right] = \frac{13}{18} \frac{q l^3}{E J_x}$$

Listoff