



گروه پارس سیویل ارائه دهنده مطالبی در مورد مهندسی عمران میباشد.

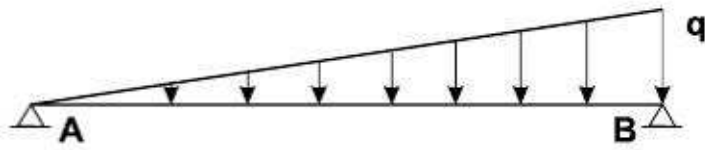
همچنین شما قادر خواهید بود که با راه های ارتباطی که در وبلاگ گروه به نشانی

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معرفی شده است میتوانید با ارائه پیشنهادات و انتقادات خود، ما را در این راه راهنمایی و همراهی کنید.

گروه پارس سیویل در انجام انواع پروژه های درسی و غیر درسی ذکر شده در وبلاگ نیز همچنین همراه شما عزیزان می باشد.

منتظر حضور گرم شما عزیزان هستیم.



$$\theta_A = \frac{7qL^3}{360EI}$$

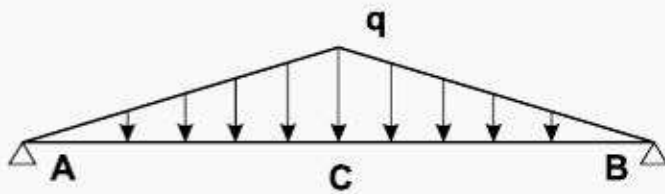
$$\theta_B = -\frac{8qL^3}{360EI}$$

$$\Delta_{max} = 0.00652 \frac{qL^4}{EI}$$

$$M_{max} = 0.064qL^2$$

$$R_A = \frac{qL}{6}$$

$$R_B = -\frac{qL}{3}$$

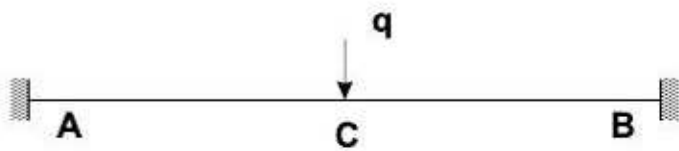


$$\theta_A = -\theta_B = \frac{5qL^3}{192EI}$$

$$\Delta_c = \frac{qL^4}{120EI}$$

$$M_c = \frac{qL^2}{12}$$

$$R_A = \frac{q}{2}$$

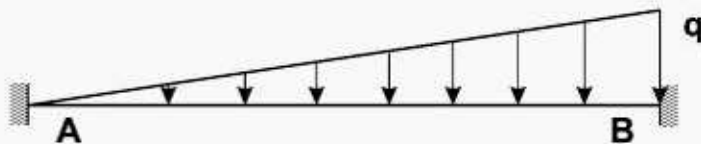


$$\theta_A = \theta_B = 0$$

$$\Delta_c = \frac{qL^3}{192EI}$$

$$M_c = \frac{qL}{8}$$

$$R_A = \frac{q}{2}$$



$$\theta_A = \theta_B = 0$$

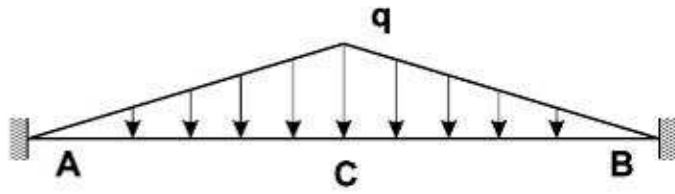
$$\Delta_{max} = 0.00131 \frac{qL^4}{384EI}$$

$$M_A = \frac{qL^2}{30}$$

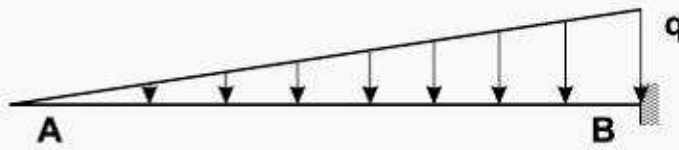
$$M_B = -\frac{5qL^2}{20}$$

$$R_A = \frac{3qL}{20}$$

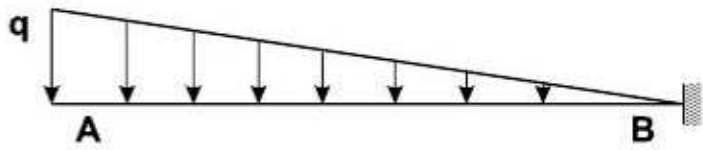
$$R_B = -\frac{7qL}{20}$$



$$\left[\begin{array}{l} \theta_A = \theta_B = 0 \\ \Delta_c = \frac{0.7qL^4}{384EI} \\ M_A = M_B = -5 \frac{qL^2}{96} \\ R_A = \frac{qL}{4} \end{array} \right.$$



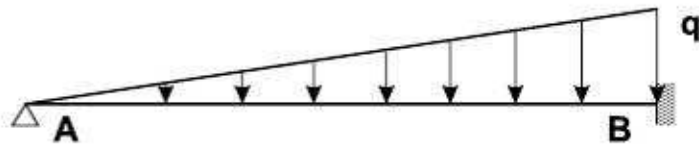
$$\left[\begin{array}{l} \theta_A = \frac{qL^3}{24EI} \\ \Delta_B = \frac{11qL^4}{30EI} \\ M_B = -\frac{qL^2}{6} \\ R_B = -\frac{qL}{2} \end{array} \right.$$



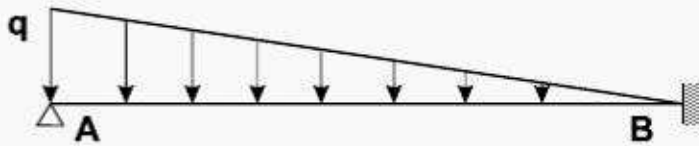
$$\left[\begin{array}{l} \theta_A = -\frac{qL^3}{8EI} \\ \Delta_A = \frac{11qL^4}{120EI} \\ M_B = -\frac{qL^2}{2} \\ R_B = -\frac{qL}{2} \end{array} \right.$$



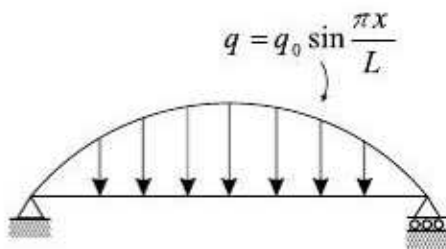
$$\left[\begin{array}{l} \theta_A = \frac{qab^2}{4EIL} \\ \Delta_A = \frac{qa^2b^3}{12EIL}(3L+a) \\ M_B = -\frac{qab}{L^2}\left(a + \frac{b}{2}\right) \\ R_A = \frac{qb^2}{2L^3}(a+2L) \\ R_B = -\frac{qa}{2L^3}(3L^2 - a^2) \end{array} \right.$$



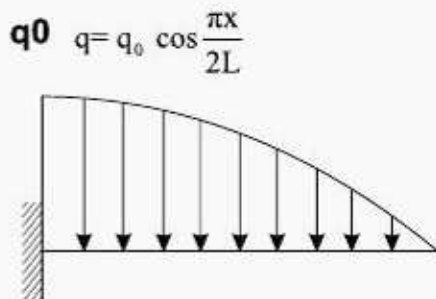
$$\left[\begin{array}{l} \theta_A = \frac{qL^3}{120EI} \\ \Delta_{max} = 0.00239 \frac{qL^4}{EI} \\ M_{max} = 0.03qL^2 \\ M_B = -\frac{qL^2}{15} \\ R_A = \frac{qL}{10} \end{array} \right.$$



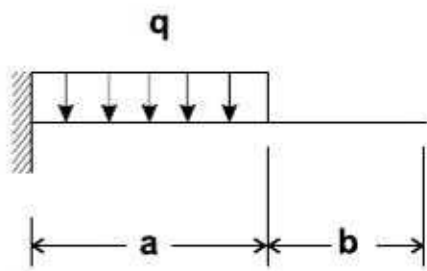
$$\left[\begin{array}{l} \theta_A = \frac{qL^3}{80EI} \\ \Delta_{max} = 0.00305 \frac{qL^4}{EI} \\ M_{max} = 0.00423 qL^2 \\ M_B = -\frac{7qL^2}{120} \\ R_A = \frac{11qL}{40} \end{array} \right.$$



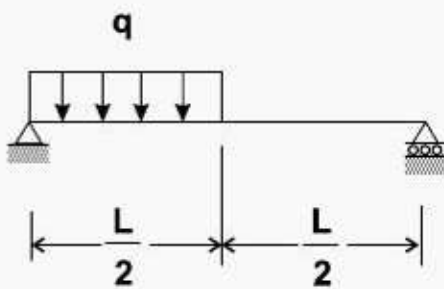
$$\left[\begin{array}{ll} v = -\frac{q_0 L^4}{\pi^4 EI} \sin \frac{\pi x}{L} & v' = -\frac{q_0 L^3}{\pi^3 EI} \cos \frac{\pi x}{L} \\ \Delta_c = \Delta_{max} = \frac{q_0 L^4}{\pi^4 EI} & \theta_A = \theta_B = \frac{q_0 L^3}{\pi^3 EI} \end{array} \right.$$



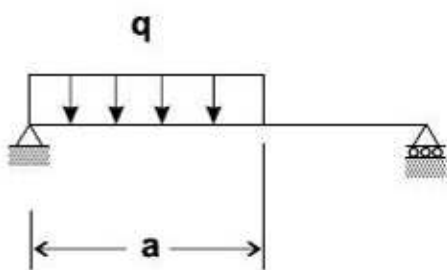
$$\left[\begin{array}{l} \theta_B = \frac{q_0 L^3}{\pi^3 EI} (\pi^2 - 8) \\ v = -\frac{q_0 L}{3\pi^4 EI} (48L^3 \cos \frac{\pi x}{2L} - 48L^3 + 3\pi^3 Lx^2 - \pi^3 x^3) \\ v' = -\frac{q_0 L}{\pi^3 EI} (2\pi^2 Lx - \pi^2 x^2 - 8L^2 \sin \frac{\pi x}{2L}) \\ \Delta_B = \frac{2q_0 L^4}{3\pi^4 EI} (\pi^3 - 24) \end{array} \right.$$



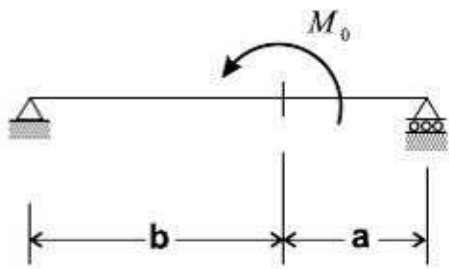
$$\begin{aligned}
 v &= -\frac{qx^2}{24EI} (6a^2 - 4ax + x^2)_{(0 \leq x \leq a)} \\
 v' &= -\frac{qx}{6EI} (3a^2 - 3ax + x^2)_{(0 \leq x \leq a)} \\
 v &= -\frac{qa^3}{24EI} (4ax - a) \\
 v' &= -\frac{qa^3}{6EI} \quad (a \leq x \leq L) \\
 \text{At } x=a: \quad v &= -\frac{qa^4}{8EI} \quad \quad \quad v' = -\frac{qa^3}{6EI} \\
 \Delta_B &= -\frac{qa^3}{24EI} (4L - a) \quad \quad \quad \theta_B = \frac{qa^3}{6EI}
 \end{aligned}$$



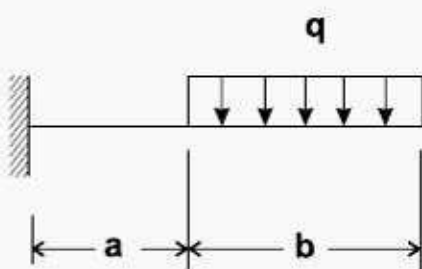
$$\begin{aligned}
 v &= -\frac{qx}{384EI} (9L^3 - 24Lx^2 + 16x^3)_{(0 \leq x \leq \frac{L}{2})} \\
 v' &= -\frac{q}{384EI} (9L^3 - 72Lx^2 + 64x^3)_{(0 \leq x \leq \frac{L}{2})} \\
 v &= -\frac{qL}{384EI} (8x^3 - 24Lx^2 + 17L^2x - L^3)_{(\frac{L}{2} \leq x \leq L)} \\
 v' &= -\frac{qL}{384EI} (24x^2 - 48Lx + 17L^2)_{(\frac{L}{2} \leq x \leq L)} \\
 \Delta_C &= \frac{5qL^4}{768EI} \quad \theta_A = \frac{3qL^3}{128EI} \quad \theta_B = \frac{7qL^3}{384EI}
 \end{aligned}$$



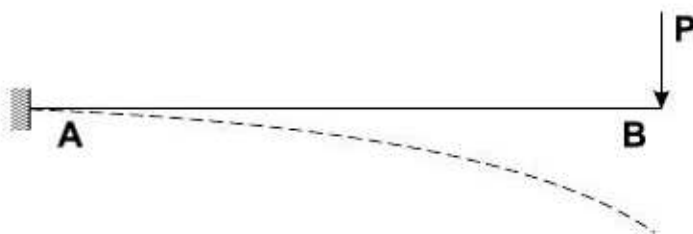
$$\begin{aligned}
 v &= -\frac{qx}{24LEI} (a^4 - 4a^3L + 4a^2L^2 + 2a^2x^2 - 4aLx^2 + Lx^3)_{(0 \leq x \leq a)} \\
 v' &= -\frac{q}{24LEI} (a^4 - 4a^3L + 4a^2L^2 + 6a^2x^2 - 12aLx^2 + 4Lx^3)_{(0 \leq x \leq a)} \\
 v &= -\frac{qa^2}{24LEI} (-a^2L + 4L^2x + a^2x - 6Lx^2 + 2x^3)_{(a \leq x \leq L)} \\
 v' &= -\frac{qa^2}{24LEI} (4L^2 + a^2 - 12Lx + 6x^2)_{(a \leq x \leq L)} \\
 \theta_A &= \frac{qa^2}{24LEI} (2L - a)^2 \quad \quad \quad \theta_B = \frac{qa^2}{24LEI} (2L^2 - a^2)
 \end{aligned}$$



$$\left[\begin{array}{l} v = -\frac{M_0 x}{6LEI} (6aL - 3a^2 - 2L^2 - 3X^2) \quad (0 \leq x \leq a) \\ v' = -\frac{M_0}{6LEI} (6aL - 3a^2 - 2L^2 - 3X^2) \quad (0 \leq x \leq a) \\ \text{At } x = a: v = -\frac{M_0 ab}{3LEI} (2a - L) \quad v' = -\frac{M_0}{6LEI} (3aL - 3a^2 - L^2) \\ \theta_A = \frac{M_0}{6LEI} (6aL - 3a^2 - 2L^2) \quad \theta_B = \frac{M_0}{6EI} (3a^2 - L^2) \end{array} \right.$$



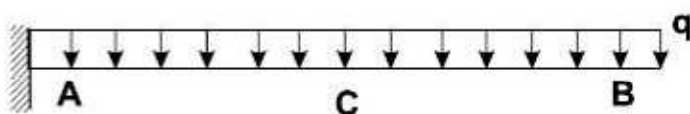
$$\left[\begin{array}{l} v = -\frac{qbx^2}{12EI} (3L + 3a - 2x) \quad (0 \leq x \leq a) \\ v' = -\frac{qbx}{2EI} (L + a - x) \quad (0 \leq x \leq a) \\ v = -\frac{q}{24EI} (x^4 - 4Lx^3 + 6L^2x^2 - 4a^3x + a^4) \quad (a \leq x \leq L) \\ v' = -\frac{q}{6EI} (x^3 - 3Lx^2 + 3L^2x - a^3) \quad (a \leq x \leq L) \\ \text{At } x = a: v = -\frac{qa^2b}{12EI} (3L + a) \quad v' = -\frac{qabL}{2EI} \\ \Delta_B = \frac{q}{24EI} (3L^4 - 4a^3L + a^4) \quad \theta_B = \frac{q}{6EI} (L^3 - a^3) \end{array} \right.$$



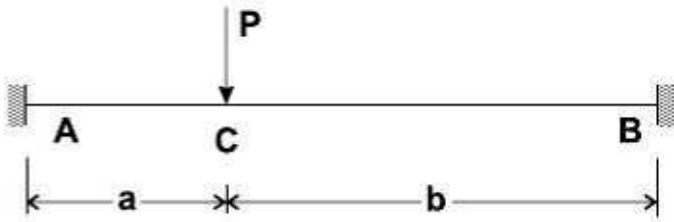
$$\left[\begin{array}{l} \Delta_B = \frac{PL^3}{3EI} \\ \theta_B = \frac{PL^2}{2EI} \end{array} \right.$$



$$\left[\begin{array}{l} \Delta_B = \frac{ML^2}{2EI} \\ \theta_B = \frac{ML}{EI} \end{array} \right.$$

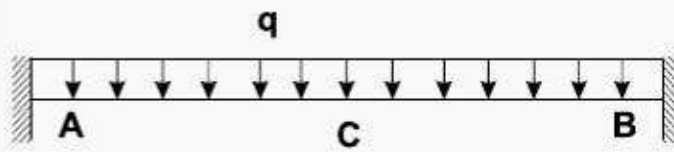


$$\left[\begin{array}{l} \Delta_B = \frac{qL^4}{8EI} \\ \theta_B = \frac{qL^3}{6EI} \end{array} \right.$$



$$\left[\begin{array}{l} \Delta_c = \frac{Pa^3b^3}{3EI} \\ M_B = \frac{Pa^2b}{L^2} \\ M_A = \frac{Pab^2}{L^2} \\ M_C = \frac{2Pa^2b^2}{L^3} \end{array} \right. \Rightarrow M = \frac{PL}{8} \text{ if } a=b = \frac{L}{2}$$

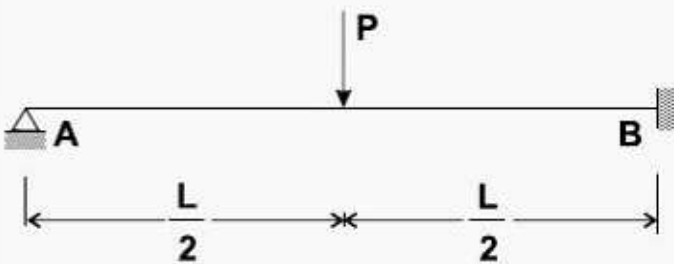
$$\Delta_c = \frac{PL^3}{192EI} \text{ if } a=b = \frac{L}{2}$$



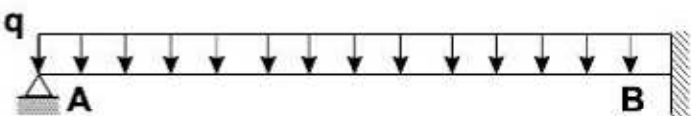
$$\left[\begin{array}{l} \Delta_c = \frac{qL^4}{384EI} \\ M_A = M_B = \frac{qL^2}{12} \\ M_C = \frac{qL^2}{24} \end{array} \right.$$



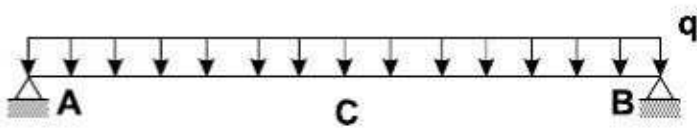
$$\left[\begin{array}{l} \theta_A = \frac{ML}{4EI} \\ M_B = \frac{M}{2} \end{array} \right. \text{ هم جهت با } M$$



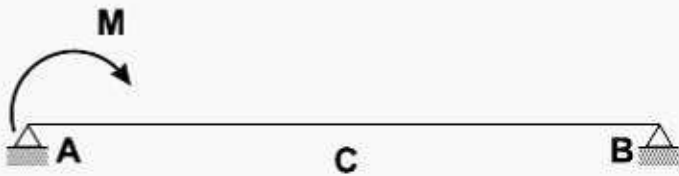
$$\left[\begin{array}{l} \theta_A = \frac{PL^2}{32EI} \\ M_B = \frac{3PL}{16} \end{array} \right.$$



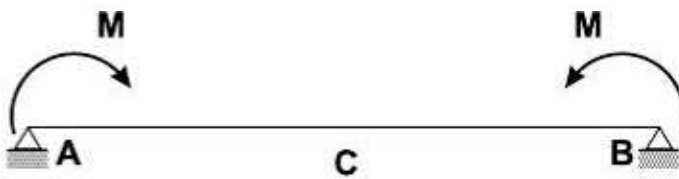
$$\left[\begin{array}{l} \theta_A = \frac{qL^3}{48EI} \\ M_B = \frac{qL^2}{8} \end{array} \right.$$



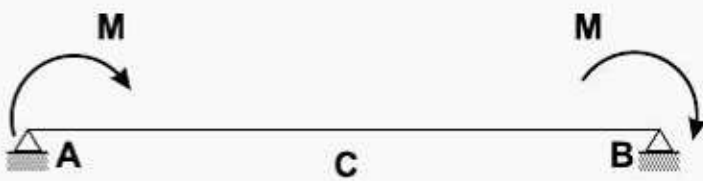
$$\left[\begin{array}{l} \Delta_C = \frac{5qL^4}{384EI} \\ \theta_A = \theta_B = \frac{qL^3}{24EI} \end{array} \right.$$



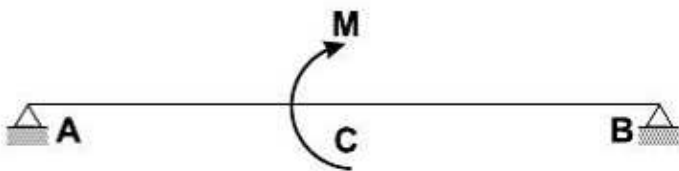
$$\left[\begin{array}{l} \Delta_C = \frac{ML^2}{16EI} \\ \theta_A = \frac{ML}{3EI} \\ \theta_B = \frac{ML}{6EI} \end{array} \right.$$



$$\left[\begin{array}{l} \Delta_C = \frac{ML^2}{8EI} \\ \theta_A = \theta_B = \frac{ML}{2EI} \end{array} \right.$$



$$\left[\begin{array}{l} \Delta_C = 0 \\ \theta_A = \theta_B = \frac{ML}{6EI} \end{array} \right.$$



$$\left[\begin{array}{l} \theta_A = \frac{ML}{24EI} \\ \theta_C = \frac{ML}{24EI} \end{array} \right. \rightarrow \theta_B = \frac{ML}{12EI}$$

