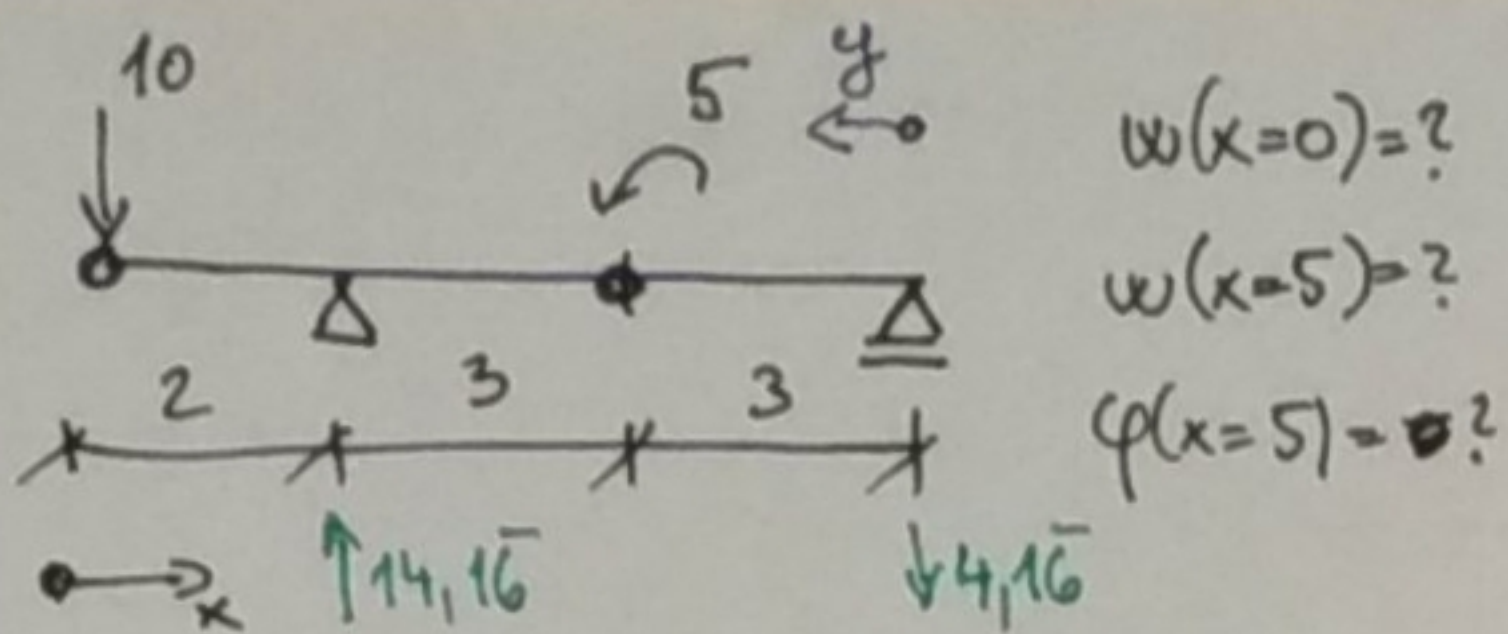




$w(x=0)=?$
 $w(x=5)=?$
 $\varphi(x=5)=?$

$$M(x) = -10x \Big|_{x>0} + 14,16 \cdot (x-2) \Big|_{x>2} - 5 \Big|_{x>5}$$

$$EI w'''' = -M(x)$$

$$EI w'''' = 10x \Big|_{x>0} - 14,16(x-2) \Big|_{x>2} + 5 \Big|_{x>5}$$

$$EI w' = C_1 + 10 \frac{x^2}{2} \Big|_{x>0} - 14,16 \frac{(x-2)^2}{2} \Big|_{x>2} + 5(x-5) \Big|_{x>5}$$

$$EI w = C_2 + C_1 x + 10 \frac{x^3}{6} \Big|_{x>0} - 14,16 \frac{(x-2)^3}{6} \Big|_{x>2} + 5 \frac{(x-5)^2}{2} \Big|_{x>5}$$

$$w(x=2)=0$$

$$(1) C_2 + C_1 \cdot 2 + \frac{5 \cdot 2^3}{3} = 0$$

$$w(x=8)=0$$

$$(2) C_2 + C_1 \cdot 8 + \frac{5 \cdot 8^3}{3} - 14,16 \cdot \frac{(8-2)^3}{6} + 5 \cdot \frac{(8-5)^2}{2} = 0$$

$$(1) C_2 = -2C_1 - 13,3$$

$$(2) C_2 + 8C_1 + 365,83 = 0$$

$$(1) \rightarrow (2) -2C_1 - 13,3 + 8C_1 + 365,83 = 0$$

$$C_1 = -\frac{352,5}{6} = -58,75$$

$$(1) C_2 = 104,16$$

$$EI w'(x) = -58,75 + \frac{5x^2}{2} - 14,16 \frac{(x-2)^2}{2} + 5(x-5) \Big|_{x>5}$$

$$EI w(x) = 104,16 - 58,75x + \frac{5x^3}{6} - 14,16 \frac{(x-2)^3}{6} + 5 \frac{(x-5)^2}{2} \Big|_{x>5}$$

$$w(x=0) = \frac{104,16}{EI}$$

$$w(x=5) = -\frac{45}{EI}$$

$$\varphi(x=5) = w'(x=5) = \frac{2,5}{EI}$$

zápis zprava souřadnice y

$$M(y) = -4,16y \Big|_{y>3} + 5 \Big|_{y>6} + 14,16(y-5) \Big|_{y>6}$$

$$w(y=3)=?$$

$$w(y=8)=?$$

$$w'(y=3)=?$$

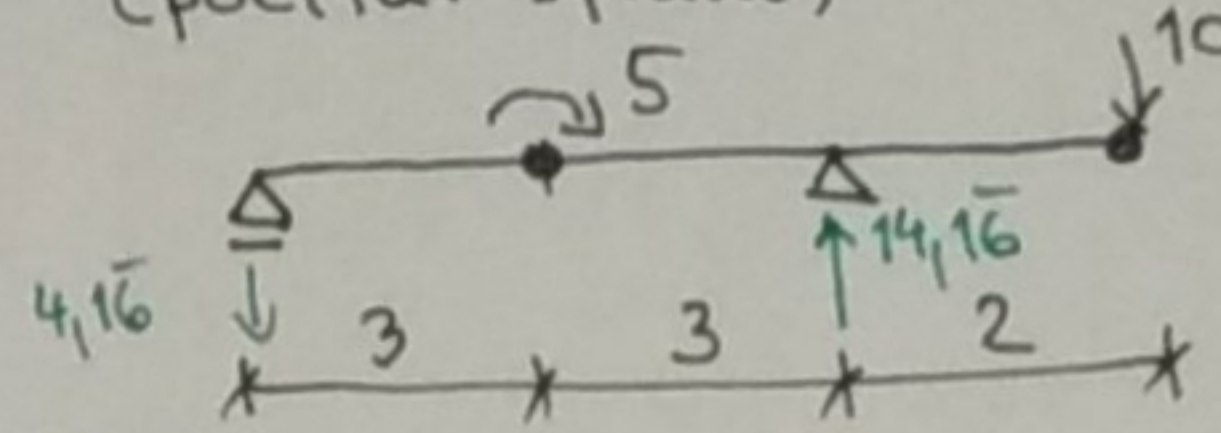
$$EI w'''' = -M(y)$$

$$EI w'''' = 4,16y \Big|_{y>3} - 5 \Big|_{y>6} - 14,16(y-5) \Big|_{y>6}$$

$$EI w' = C_1 + 4,16 \frac{y^2}{2} \Big|_{y>3} - 5(y-3) \Big|_{y>6} - 14,16 \frac{(y-5)^2}{2} \Big|_{y>6}$$

$$EI w = C_2 + C_1 y + 4,16 \frac{y^3}{6} \Big|_{y>3} - 5 \frac{(y-3)^2}{2} \Big|_{y>6} - 14,16 \frac{(y-5)^3}{6} \Big|_{y>6}$$

Pokud není řečeno, z které strany počítat, je lepší si nosník otočit (počítat zprava)



$w(x=3)=?$
 $w(x=8)=?$
 $w'(x=8)=?$

$$M(x) = -4,16x \Big|_{x>3} + 5 \Big|_{x>8} + 14,16(x-6) \Big|_{x>6}$$

$$EI w'''' = -M(x)$$

$$EI w'''' = 4,16x \Big|_{x>3} - 5 \Big|_{x>8} - 14,16(x-6) \Big|_{x>6}$$

$$EI w' = C_1 + 4,16 \frac{x^2}{2} \Big|_{x>3} - 5(x-3) \Big|_{x>8} - 14,16 \frac{(x-6)^2}{2} \Big|_{x>6}$$

$$EI w = C_2 + C_1 x + 4,16 \frac{x^3}{6} \Big|_{x>3} - 5 \frac{(x-3)^2}{2} \Big|_{x>8} - 14,16 \frac{(x-6)^3}{6} \Big|_{x>6}$$

$$w(x=0)=0 \Rightarrow C_2=0$$

$$w(x=6)=0$$

$$6 \cdot C_1 + 4,16 \cdot \frac{6^3}{6} - 5 \frac{(6-3)^2}{2} = 0$$

$$C_1 = -21,25$$

$$EI w' = -21,25 + 4,16 \frac{x^2}{2} \Big|_{x>3} - 5 \Big|_{x>8} - 14,16(x-6) \Big|_{x>6}$$

$$EI w = -21,25 \cdot x + 4,16 \frac{x^3}{6} \Big|_{x>3} - 5 \frac{(x-3)^2}{2} \Big|_{x>8} - 14,16 \frac{(x-6)^3}{6} \Big|_{x>6}$$

$$w(x=3) = -\frac{45}{EI}$$

$$\varphi(x=3) = -\frac{2,5}{EI}$$

$$w(x=8) = \frac{104,16}{EI}$$

Otočení nosníku nemá vliv na průhyb. U otočení dojde ke změně znaménka.

$$w(y=0)=0 \Rightarrow C_2=0$$

$$w(y=6)=0: 6C_1 + 4,16 \cdot \frac{6^3}{6} - 5 \frac{(6-3)^2}{2} = 0$$

$$C_1 = -21,25$$

$$w(y=3) = -\frac{45}{EI}$$

$$w(x=8) = +\frac{104,16}{EI}$$

$$\varphi(y=3) = -\frac{2,5}{EI}$$

