

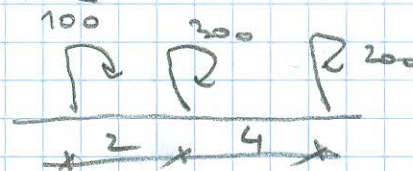
$$\zeta^{(1)} = 0,062 \quad u_1 = 1,24 \text{ m}$$

$$\zeta^{(2)} = 0,062 + \frac{4}{20} = 0,262 \quad u_2 = 5,24 \text{ m}$$

$$\begin{aligned} \min Z_s &= m \int_{u_1}^{u_2} Z'(s, u) du = m \int_{\zeta_1}^{\zeta_1 + \frac{4}{20}} Z'(s, \zeta) d\zeta = -20 \cdot 20 \int_{0,062}^{0,262} (10\zeta^3 - 12\zeta^2 + 3\zeta) d\zeta \\ &= -4000 \cdot \left[10 \cdot \frac{\zeta^4}{4} - 12 \frac{\zeta^3}{3} + \frac{3\zeta^2}{2} \right] \Big|_{0,062}^{0,262} \\ &= -15,18 \end{aligned}$$

4) KRITERIJUM ZA OPASAN POLJE

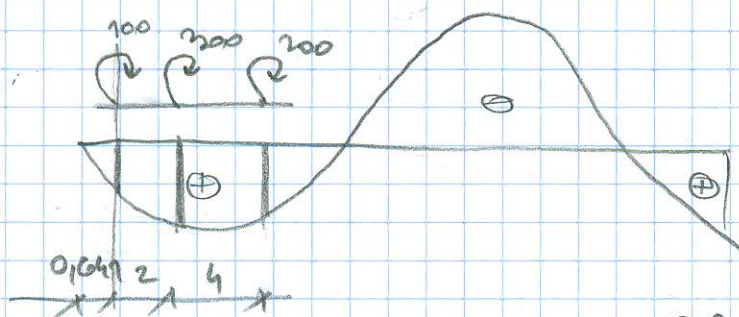
$$\sum_{m=1}^3 M_m Z''(s, u_m) = 0$$



$$\zeta_1 = \zeta \quad \zeta_2 = \zeta + \frac{2}{20} \quad \zeta_3 = \zeta + \frac{6}{20}$$

$$\begin{aligned} 100 \cdot (1,5\zeta^2 - 1,2\zeta + 0,15) + 300 \cdot (1,5(\zeta + 0,1)^2 - 1,2(\zeta + 0,1) + 0,15) + \\ 200 (1,5(\zeta + 0,3)^2 - 1,2(\zeta + 0,3) + 0,15) &= 0 \\ 900\zeta^2 - 450\zeta + 13,5 &= 0 \end{aligned}$$

$$\zeta_1 = 0,4679 \quad \zeta_2 = 0,03206$$



$$\zeta \in [0, 0,355]$$

$$u_1 = 0,03206 \cdot 20 = 0,641$$

$$u_2 = 0,641 + 2 = 2,641$$

$$u_3 = 0,641 + 6 = 6,641$$

$$\zeta_1 = 0,03206$$

$$\zeta_2 = 0,13206$$

$$\zeta_3 = 0,33206$$

$$Z'(s, \zeta_1) = 10 \cdot 0,03206^3 - 12 \cdot 0,03206^2 + 3 \cdot 0,03206 = 0,0842$$

$$Z'(s, \zeta_2) = 0,2099$$

$$Z'(s, \zeta_3) = -0,0392$$

$$\begin{aligned} \max Z_s &= \sum_{m=1}^3 M_m \cdot Z'(s, u_m) = 100 \cdot 0,0842 + 300 \cdot 0,2099 + 200 \cdot (-0,0392) \\ &= 63,55 \end{aligned}$$