

Solving the quadratic by formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{1200 \pm \sqrt{1.44 \times 10^6 - 597531}}{285}$$

$$x = 7.43 \text{ m} \quad \text{and} \quad \underline{0.99 \text{ m}}$$

Since one of the roots of the quadratic ( $x = 0.99 \text{ m}$ ) is in the range assumed, it is a correct assumption.

Substituting into expression for  $y$

$$\begin{aligned} EI y_{\max} &= \frac{1215 (0.99)^3}{6} - 250 (0.19)^3 - 568.3 (0.99) \\ &= -367.8 \text{ Nm}^3 \end{aligned}$$

$$\begin{aligned} y_{\max} &= - \frac{367.8}{207 \times 10^9 \times 2.3 \times 10^{-6}} \\ &= -0.773 \times 10^{-3} \text{ m} \\ &= \underline{\underline{-0.773 \text{ mm}}} \end{aligned}$$