$$\int_{-5}^{x} (t-1)^3 \, dt = \left[\frac{(t-1)^4}{4}\right]_{-5}^{x} = \frac{(x-1)^4}{4} - \frac{6^4}{4}$$

let $f(x) = 1$

$$\frac{(x-1)^4}{4} = 1 + \frac{6^4}{4} \Rightarrow (x-1)^4 = 4 + 6^4$$

$$\boxed{x = (4+6^4)^{\frac{1}{4}} + 1}$$

→ but in options, no interval given as asked in question