4 Fig. 4 shows the graph of $y = \sqrt{1+x^3}$.
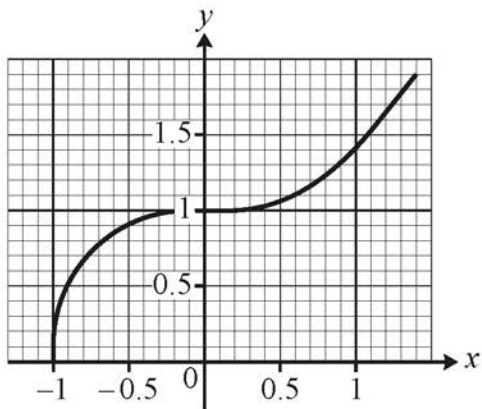

Fig. 4

(a) Use the trapezium rule with $h = 0.5$ to find an estimate of $\int_{-1}^{0} \sqrt{1+x^3}\,dx$, giving your answer correct to 6 decimal places. **[3]**

(b) State whether your answer to part **(a)** is an under-estimate or an over-estimate, justifying your answer. **[1]**