

YOU & MATHS If $\sqrt{n^3 + n^3 + n^3 + n^3 + n^3} = 25$, then $n = \square$?

(USA Lehigh University: High School Math Contest, 2001)

Adding the like terms on the left-hand side of the equation, we obtain that:

$$\sqrt{n^3 + n^3 + n^3 + n^3 + n^3} = 25 \rightarrow \sqrt{5n^3} = 25.$$

Since the term on the right-hand side is greater than zero ($25 \geq 0$), in order to solve this equation we simply need to raise both sides of the equality to the square power. We get:

$$5n^3 = 25^2 \rightarrow 5n^3 = (5^2)^2 \rightarrow 5n^3 = 5^4 \rightarrow n^3 = \frac{5^4}{5} \rightarrow n^3 = 5^3.$$

Finally, to find the value of n , we apply the cubic root to both sides of the equation above. The solution is:

$$n = 5.$$