Problem 4: Rational or Irrational?

Determine whether the real number

$$\sqrt[3]{25 + 5\sqrt{20}} + \sqrt[3]{25 - 5\sqrt{20}}$$

is rational or irrational. Fully explain your answer and show your steps.

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted. The use of generative AI tools is not allowed.