$$\boxed{x^3 = 3^3}$$

utiliser la division euclidienne pour extraire de cette petite équation les racines complexes

SOLUTION

---------- Q U E S T I O N ----------

$x^3 = 3^3$

x = ? (dans R et C par la division euclidienne)

---------- R É P O N S E ----------

$x^3 = 3^3$

$\sqrt[3]{(x^3)} = \sqrt[3]{(3^3)}$

$x = \sqrt[3]{27}$

■ $x = 3$

--- division euclidienne ---

- dividende: $x^3 = 3^3 \Rightarrow x^3 - 3^3 = 0 \Rightarrow x^3 + 0 \cdot x^2 + 0 \cdot x - 3^3 = 0$
- diviseur: $x = 3 \Rightarrow x - 3 = 0$

$(x^3 + 0 \cdot x^2 + 0 \cdot x - 3^3) / (x - 3) = (x^2 + 3x + 9)$

$x^2 + 3x + 9 = 0$

$\Delta = 3^2 - 4 \cdot 1 \cdot 9 = 9 - 36 = -27$

$\sqrt{\Delta} = \pm i\sqrt{27} = \pm 3i\sqrt{3}$

- racine #1: $x = (-3 + 3i\sqrt{3})/2 \cdot 1 = -3/2 + (3/2)i\sqrt{3} = 3/2(i\sqrt{3} - 1)$
- racine #2: $x = (-3 - 3i\sqrt{3})/2 \cdot 1 = -3/2 - (3/2)i\sqrt{3} = -3/2(i\sqrt{3} + 1)$

■ $x = 3/2(i\sqrt{3} - 1)$

■ $x = -3/2(i\sqrt{3} + 1)$