

Question 10

Solve the equation:

$$2^{x+1} + 2^x = 48$$

Instructions: Solve the equation algebraically. Express your answer in exact form and give an approximation rounded to three decimal places.

Question 10 - Solution

We are given:

$$2^{x+1} + 2^x = 48$$

Step 1: Use the property $2^{x+1} = 2 \cdot 2^x$:

$$2 \cdot 2^x + 2^x = 48 \Rightarrow 3 \cdot 2^x = 48 \Rightarrow 2^x = \frac{48}{3} = 16$$

Step 2: Solve for x :

$$2^x = 16 = 2^4 \Rightarrow \boxed{x = 4}$$

Exact answer: $\boxed{x = 4}$

Approximate answer: $\boxed{x = 4.000}$