

Ecuții exponențiale

Clasa a X a / Bacalaureat

⑤ Rezolvati in \mathbb{R} , ecuația:

$$\checkmark \quad 2^x - 14 \cdot 2^{-x} = -5$$

Rezolvare:

$$2^x - 14 \cdot 2^{-x} = -5$$

$$| \quad a^{-n} = \frac{1}{a^n}$$

$$2^x - 14 \cdot \frac{1}{2^x} = -5$$

$$\text{notăm } 2^x = y \quad \Rightarrow \quad y - 14 \cdot \frac{1}{y} = -5, \quad y \neq 0$$

$$y^2 - 14 = -5y \Rightarrow y^2 + 5y - 14 = 0; \quad \Delta = 81$$

$$y_{1,2} = \frac{-5 \pm 9}{2} \quad \left\{ \begin{array}{l} \frac{-14}{2} = -7 \\ \frac{4}{2} = 2 \end{array} \right.$$

$$y_1 = -7 \Rightarrow 2^x = -7 \text{ nu are solutie}$$

$$y_2 = 2 \Rightarrow 2^x = 2 \Rightarrow 2^x = 2^1 \rightarrow x = 1 \quad | \Rightarrow S = \{1\}$$