

386. Rješenje jednadžbe $5^{x-\frac{1}{2}} - 4^{x-\frac{1}{2}} = 5^{x-\frac{3}{2}} - 0.2 \cdot 2^{2x-1}$ pripada skupu:

1. $\left\{-\frac{1}{2}, \frac{1}{2}\right\}$ 2. $\left\{-\frac{1}{3}, \frac{1}{3}\right\}$ 3. $\left\{-\frac{1}{4}, \frac{1}{4}\right\}$ 4. $\left\{-\frac{1}{5}, \frac{1}{5}\right\}$

$$5^{x-\frac{1}{2}} - 4^{x-\frac{1}{2}} = 5^{x-\frac{3}{2}} - 0.2 \cdot 2^{2x-1}$$

$$5^x \cdot 5^{-\frac{1}{2}} - 4^x \cdot 4^{-\frac{1}{2}} = 5^x \cdot 5^{-\frac{3}{2}} - \frac{2}{10} \cdot (2^2)^x \cdot 2^{-1}$$

$$5^x \left(\frac{1}{5}\right)^{\frac{1}{2}} - 4^x \cdot \left(\frac{1}{4}\right)^{\frac{1}{2}} = 5^x \cdot \left(\frac{1}{5}\right)^{\frac{3}{2}} - \frac{1}{5} \cdot 4^x \cdot \frac{1}{2}$$

$$5^x \cdot \sqrt{\frac{1}{5}} - 4^x \cdot \sqrt{\frac{1}{4}} = 5^x \cdot \sqrt[2]{\left(\frac{1}{5}\right)^3} - \frac{1}{10} \cdot 4^x$$

$$5^x \cdot \frac{\sqrt{1}}{\sqrt{5}} - 4^x \cdot \frac{\sqrt{1}}{\sqrt{4}} = 5^x \cdot \sqrt{\frac{1}{125}} - \frac{1}{10} \cdot 4^x$$

$$5^x \cdot \frac{1}{\sqrt{5}} - 4^x \cdot \frac{1}{2} = 5^x \cdot \frac{\sqrt{1}}{\sqrt{125}} = \frac{1}{10} \cdot 4^x$$

$$5^x \cdot \frac{1}{\sqrt{5}} - 5^x \cdot \frac{1}{\sqrt{125}} = 4^x \cdot \frac{1}{2} - \frac{1}{10} \cdot 4^x$$

$$5^x \left(\frac{1}{\sqrt{5}} - \frac{1}{\sqrt{25 \cdot 5}}\right) = 4^x \left(\frac{1}{2} - \frac{1}{10}\right)$$

$$5^x \left(\frac{1}{\sqrt{5}} - \frac{1}{5\sqrt{5}}\right) = 4^x \cdot \left(\frac{5-1}{10}\right)$$

$$5^x \left(\frac{5-1}{5\sqrt{5}}\right) = 4^x \cdot \frac{4}{10}$$

$$5^x \cdot \frac{4}{5\sqrt{5}} = 4^x \cdot \frac{2}{5} \quad / : 4^x$$

$$\frac{5^x}{4^x} \cdot \frac{4}{5\sqrt{5}} = \frac{2}{5} \quad / \cdot \frac{5\sqrt{5}}{4}$$

$$\frac{5^x}{4^x} = \frac{2}{5} \cdot \frac{5\sqrt{5}}{4}$$

$$\left(\frac{5}{4}\right)^x = \frac{\sqrt{5}}{2} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5^2}}{2\sqrt{5}} = \frac{5}{2\sqrt{5}} = \frac{5}{\sqrt{2^2 \cdot 5}} = \frac{5}{\sqrt{20}}$$

$$\left(\frac{5}{4}\right)^x = \frac{5}{\sqrt{20}} = \frac{\sqrt{25}}{\sqrt{20}} = \sqrt{\frac{25}{20}} = \sqrt{\frac{5}{4}} = \left(\frac{5}{4}\right)^{\frac{1}{2}}$$

$$\left(\frac{5}{4}\right)^x = \left(\frac{5}{4}\right)^{\frac{1}{2}}$$

$x = \frac{1}{2} \Rightarrow$ Rješenje $x = \frac{1}{2}$ pripada skupu $\left\{-\frac{1}{2}, \frac{1}{2}\right\}$ jer jedino taj skup uključuje naš x