

P 71 N 179

$$4^{2x+1} - \frac{7}{3} \cdot 9^x > 7(3^{2x}) + 16^{x-1}$$

$$4^{2x+1} - 4^{2x-2} > 7 \cdot 3^{2x} + \frac{7}{3} \cdot 3^{2x}$$

$$4^{2x} (4 - 4^{-2}) > 3^{2x} \left(7 + \frac{7}{3}\right)$$

$$4^{2x} \left(\frac{63}{16}\right) > 3^{2x} \left(\frac{28}{3}\right)$$

$$\frac{4^{2x}}{3^{2x}} > \frac{28}{3} \cdot \frac{16}{63} \rightarrow \left(\frac{4}{3}\right)^{2x} > \frac{448}{189}$$

$$2x > \log_{\frac{4}{3}} \frac{448}{189} \rightarrow 2x > \log_{\frac{4}{3}} \frac{2^6 \cdot 7}{3^3 \cdot 7}$$

$$2x > \log_{\frac{4}{3}} \left(\frac{2^2}{3}\right)^3 \rightarrow 2x > \log_{\frac{4}{3}} \left(\frac{4}{3}\right)^3$$

$$\rightarrow 2x > 3$$

$$\rightarrow x > \frac{3}{2}$$

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$$\text{LH} (2e^{\sqrt{x}} + 3) \leq \text{RH} (e^{2\sqrt{x}} - 2)$$

$$\begin{cases} x > \frac{1}{4} \ln^2 2 \\ \text{LH} (2e^{\sqrt{x}} + 3) \leq \text{RH} (e^{2\sqrt{x}} - 2) \end{cases}$$

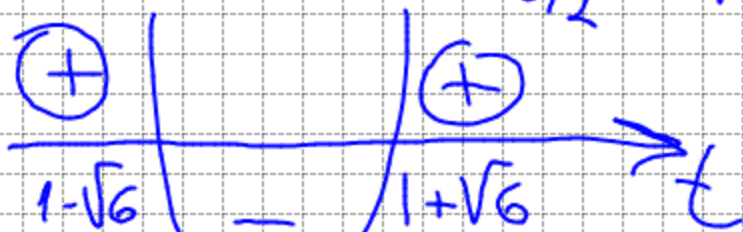
$$\begin{cases} x > \frac{1}{4} \ln^2 2 \\ 2e^{\sqrt{x}} + 3 \leq e^{2\sqrt{x}} - 2 \end{cases}$$

$$\begin{cases} x > \frac{1}{4} \ln^2 2 \\ 2e^{\sqrt{x}} - e^{2\sqrt{x}} + 5 \leq 0 \end{cases}$$

$$\begin{cases} x > \frac{1}{4} \ln^2 2 \\ e^{\sqrt{x}} = t \end{cases}$$

$$-t^2 + 2t + 5 \leq 0 \rightarrow t^2 - 2t - 5 \geq 0 \rightarrow t^2 - 2t - 5 = 0$$

$$t_{1,2} = 1 \pm \sqrt{1+5} = 1 \pm \sqrt{6}$$



$$\begin{cases} e^{\sqrt{x}} \leq 1-\sqrt{6} \cup e^{\sqrt{x}} \geq 1+\sqrt{6} \\ x > \frac{1}{4} \ln^2 2 \end{cases} \Rightarrow \begin{cases} \sqrt{x} \leq \ln(1-\sqrt{6}) \cup \sqrt{x} \geq \ln(1+\sqrt{6}) \\ x > \frac{1}{4} \ln^2 2 \end{cases}$$

$$\begin{cases} x \leq \ln^2(1-\sqrt{6}) \cup x \geq \ln^2(1+\sqrt{6}) \\ x > \frac{1}{4} \ln^2 2 \end{cases}$$

$$\Rightarrow x \geq \ln^2(1+\sqrt{6})$$

C.E.

$$\begin{cases} 2e^{\sqrt{x}} + 3 > 0 \\ e^{2\sqrt{x}} - 2 > 0 \end{cases} \Rightarrow \begin{cases} x \geq 0 \\ x > \frac{1}{4} \ln^2 2 \end{cases}$$

$$\textcircled{1} 2e^{\sqrt{x}} > -3$$

$$\begin{cases} x \geq 0 \\ e^{\sqrt{x}} > -\frac{3}{2} \rightarrow \forall x \in \mathbb{R} \end{cases}$$

$$\textcircled{2} \begin{cases} x \geq 0 \\ e^{2\sqrt{x}} > 2 \end{cases} \rightarrow \begin{cases} x \geq 0 \\ \sqrt{x} > \ln 2 \end{cases}$$

$$\begin{cases} x \geq 0 \\ \sqrt{x} > \frac{1}{2} \ln 2 \end{cases} \Rightarrow \begin{cases} x \geq 0 \\ x > \left(\frac{1}{2} \ln 2\right)^2 \end{cases}$$

$$\begin{cases} x \geq 0 \\ x > \frac{1}{4} \ln^2 2 \end{cases}$$