

② $\log_2(x-1) + \log_2(x+3) = 3$ Να λυσετε την εξίσωση

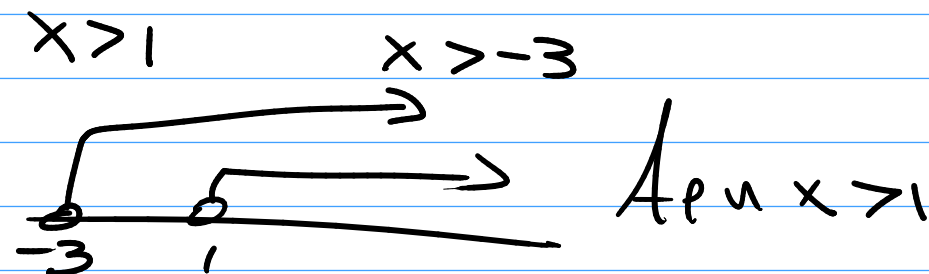
ΛΥΣΗ

$$\log_2(x-1) + \log_2(x+3) = 3$$

Περιορισμοί $x-1 > 0$ $x+3 > 0$

$$\log_2(x-1)(x+3) = \log_2 2^3$$

1-1 f↑.



$$(x-1)(x+3) = 2^3 \Rightarrow (x-1)(x+3) = 8$$

$$\Rightarrow x^2 + 3x - x - 3 = 8 \Rightarrow x^2 + 2x - 3 = 8 \Rightarrow x^2 + 2x - 11 = 0$$

$$\Delta = 4 - 4 \cdot 1 \cdot (-11) \Rightarrow \Delta = 4 + 44 = 48 \quad p_{1,2} = \frac{-2 \pm \sqrt{48}}{2} = \frac{-2 \pm \sqrt{16 \cdot 3}}{2} = \frac{-2 \pm 4\sqrt{3}}{2}$$

$$= \frac{-2(1 \pm 2\sqrt{3})}{2} = -(1 \pm 2\sqrt{3}) \Rightarrow \begin{aligned} &\rightarrow -(1 + 2\sqrt{3}) = -1 - 2\sqrt{3} \text{ απορριπται.} \\ &\rightarrow -(1 - 2\sqrt{3}) = -1 + 2\sqrt{3} \text{ δεκτο} \end{aligned}$$