

$$a) \log_{10}(22-x) = -1 + \log_{10}(x)$$

$$\log(22-x) - \log(x) = -1$$



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$$\log(A) + \log(B) = \log(A \cdot B)$$

$$\log(A) - \log(B) = \log\left(\frac{A}{B}\right)$$

$$\log_{10} 10^{-1}$$



$$8 = \log_{10} 10^8$$

$$24 = \log_{10} 10^{24}$$

$$-1 = \log_{10} 10^{-1} \rightarrow \log_{10} 10^7 = 7 \cdot \log_{10} 10 = 7 \cdot 1 = 7$$

$$\log 7^2 = 2 \cdot \log 7$$

$$\log_4 4 = 1$$

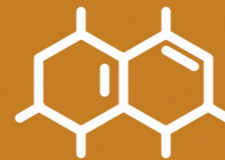
$$-1 = \log_{10} 10^{-1}$$

$$8 = \log_{10} 10^8$$

$$-31 = \log_{10} 10^{-31}$$

$$-1 = \log_7 7^{-1}$$

$$4 = \log_{11} 11^4$$



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$$\log_{10} \left( \frac{22-x}{x} \right) = \log_{10} 10^{-1}$$



$$\frac{22-x}{x} = 10^{-1}$$

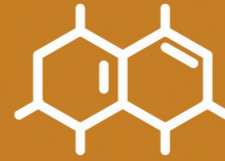
$$\frac{22-x}{x} = \frac{1}{10}$$

$$10 \cdot (22-x) = 1 \cdot x$$

$$220 - 10x = x$$

$$220 = 11x \quad ; \quad x = \frac{220}{11} \quad ; \quad x = 20$$





$$3 \log x = 2 \log x + \log 3$$

$$3 \log x - 2 \log x = \log 3$$

$$\log x^3 - \log x^2 = \log 3$$

$$\cancel{\log} \frac{x^3}{x^2} = \cancel{\log} 3$$

$$x = 3$$





$$\log(x+3) + \log(x) = \log(4x)$$



$$\log_{10}[(x+3) \cdot x] = \log_{10}(4x)$$

$$x^2 + 3x = 4x$$

$$x^2 - x = 0$$

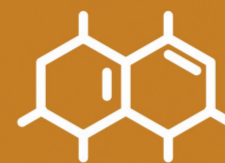
f.c

$$x \cdot (x-1) = 0$$

$$x = 0$$

$$x - 1 = 0$$

$$x = 1$$



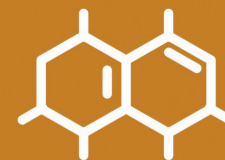
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$$\frac{\log 3 + \log (11 - x^3)}{\log (s - x)} = 2$$

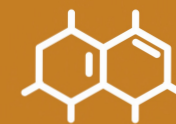


$$\log 3 + \log (11 - x^3) = 2 \cdot \log (s - x)$$

$$\cancel{\log} 3 \cdot \underline{(11 - x^3)} = \cancel{\log} \underline{(s - x)^2}$$



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$$-3x^3 - x^2 + 10x + 8 = 0$$

$$-3x^2 + 2x + 8 = 0$$

$$\begin{matrix} & -4/3 \\ < & \\ & 2 \end{matrix}$$

$$\text{Sol} \left\{ \begin{array}{ll} x = -1 & \times \\ x = -4/3 & \times \\ x = 2 & \checkmark \end{array} \right.$$

$$\begin{array}{l} + 8 \\ - 8 \\ + 5 \\ - 5 \\ + 2 \\ - 2 \\ + 1 \\ - 1 \end{array}$$



$$\log 0 = \cancel{x}$$

$$\log -a = \cancel{x}$$

$$(x^2 - 5x + 9) \cdot \log 2 + \log 125 = 3 \quad \rightarrow \quad 3 = \log_{10} 10^3$$

$$\Rightarrow \log 2^{(x^2 - 5x + 9)} + \log 125 = \log 10^3$$

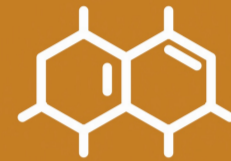
$$\Rightarrow \log 2^{(x^2 - 5x + 9)} = \log 10^3 - \log 125$$

$$\Rightarrow \cancel{\log} 2^{(x^2 - 5x + 9)} = \cancel{\log} \frac{1000}{125}$$

$$2^{(x^2 - 5x + 9)} = 8$$

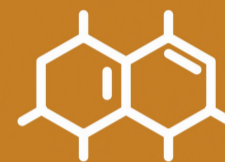
Εξίσωση εκθετική

$$8 = 2^3$$



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$$2(x^2 - 5x + 9) = 2^3$$



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$$x^2 - 5x + 9 = 3$$

$$x^2 - 5x + 6 = 0$$

$$\begin{array}{l} \underline{x=2} \rightarrow \checkmark \\ \underline{x=3} \rightarrow \checkmark \end{array} \quad \begin{array}{l} \text{con probables} \\ \text{~~~~~} \\ \text{~~~~~} \end{array}$$

