

28/2/2018

PAG. 451 M 374

$$\log(x-1) - 2 \cdot \log(x+1) - \log 8 = -2$$

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

C.E.

$$\begin{cases} x-1 > 0 \\ x+1 > 0 \end{cases} \begin{cases} x > 1 \\ x > -1 \end{cases}$$

||

$$\boxed{x > 1}$$

$$-2 = \log_{10} 10^{-2}$$

$$-2 = -2 \cdot 1 = -2 \cdot \log_{10} 10 = \log_{10} 10^{-2}$$

$$\log(x-1) - \log(x+1)^2 - \log 8 = \log 10^{-2}$$

$$\log \frac{x-1}{(x+1)^2} - \log 8 = \log \left(\frac{1}{100} \right)$$

$$\log \frac{x-1}{8(x+1)^2} = \log \frac{1}{100}$$

$$\frac{x-1}{8(x+1)^2} = \frac{1}{100}$$

$$25(x-1) = 8(x+1)^2$$

$$25x - 25 = 8(x^2 + 2x + 1)$$

$$2x^2 + 4x + 2 - 25x + 25 = 0$$

$$2x^2 - 21x + 27 = 0$$

$$\Delta = 441 - 216 = 225 = 15^2$$

$$x = \frac{21 \pm 15}{4}$$

$$\frac{6}{4} = \frac{3}{2}$$

ACCETTABILI

$$\frac{36}{4} = 9$$

PERCHÉ > 1

$$\boxed{x = \frac{3}{2} \vee x = 9}$$

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$$\log_2(2x+6) - \log_4(x-1) = 3$$

CAMBIA MEMO DI BASE

$$\log_a b = \frac{\log_m b}{\log_m a}$$

C.E.

$$\begin{cases} 2x+6 > 0 \\ x-1 > 0 \end{cases} \begin{cases} x > -3 \\ x > 1 \end{cases} \Rightarrow \boxed{x > 1}$$

$$\log_2(2x+6) - \frac{\log_2(x-1)}{\log_2 4} = 3 \cdot \log_2 2$$

$$\log_2(2x+6) - \frac{\log_2(x-1)}{2} = \log_2 2^3$$

$$2 \log_2(2x+6) - \log_2(x-1) = 2 \cdot \log_2 8$$

$$\log_2(2x+6)^2 - \log_2(x-1) = \log_2 8^2$$

$$\log_2 \frac{(2x+6)^2}{x-1} = \log_2 64 \rightsquigarrow \frac{(2x+6)^2}{x-1} = 64$$

$$(2x+6)^2 = 64(x-1)$$

$$4x^2 + 36 + 24x - 64x + 64 = 0$$

$$4x^2 - 40x + 100 = 0$$

$$x^2 - 10x + 25 = 0$$

$$(x-5)^2 = 0 \rightsquigarrow \boxed{x = 5}$$

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$$5^x = 9$$

$$\log_5 5^x = \log_5 9$$

$$x \log_5 5 = \log_5 9$$

$$x = \log_5 9 = \frac{\log 9}{\log 5} = 1,365212383\dots$$

DA CALCOLATRICE

$$5^{1,3652123} = 8,9999987\dots$$

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$$4 \cdot 5^x = 3 \cdot 7^x \quad \downarrow \text{ applico } \log \text{ (base 10)} \\ \text{a entrambi i membri}$$

$$\log (4 \cdot 5^x) = \log (3 \cdot 7^x)$$

$$\log 4 + \log 5^x = \log 3 + \log 7^x$$

$$\log 4 + x \log 5 = \log 3 + x \log 7$$

$$x \log 5 - x \log 7 = -\log 4 + \log 3$$

$$x (\log 5 - \log 7) = \log 3 - \log 4$$

$$x = \frac{\log 3 - \log 4}{\log 5 - \log 7}$$