Pag 662 n 391

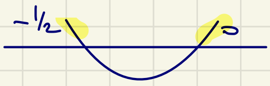
$$\log_3 |2x^2+x| + \log_3 \frac{1}{5} = 1$$

C.E. $2x^2+x \neq 0$

$x \neq -\frac{1}{2}$, $x \neq 0$

$$\log_3 \left(|2x^2+x| \cdot \frac{1}{5}\right) = \log_3 3 \quad \rightsquigarrow^{inj}$$

$$\frac{|2x^2+x|}{5} = 3 \quad \rightsquigarrow \quad |2x^2+x| = 15$$



Caso a: $2x^2+x \geq 0 \qquad x(2x+1) \geq 0$

$x \leq -\frac{1}{2} \quad \vee \quad x \geq 0$

$$2x^2+x-15=0$$
$$2x^2+6x-5x-15=0$$
$$2x(x+3)-5(x+3)=0$$
$$(2x-5)(x+3)=0 \quad \rightsquigarrow \quad \boxed{x = \frac{5}{2} \qquad x=-3}$$

Vanno bene

Accettabili rispetto alle c.e.

Caso b: $2x^2+x \leq 0 \quad \rightsquigarrow \quad -\frac{1}{2} \leq x \leq 0$

$$-2x^2-x-15=0$$
$$2x^2+x+15=0 \qquad \Delta = 1^2-4\cdot 2\cdot 15 = 1-120 = -119 < 0$$

$\rightsquigarrow$ Impossibile

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n 393

$$(\log_2 x^2)^2 + \log_2 x = 7(1-\log_2 x) - 2$$

C.E. $x>0$

$$(2\log_2 x)^2 + \log_2 x = 7 - 7\log_2 x - 2$$

$\log_2 x = s$

$$4s^2+s = 5-7s$$

$$4s^2+8s-5=0$$
$$4s^2-2s+10s-5=0$$
$$2s(2s-1)+5(2s-1)=0$$

$$(2s+5)(2s-1)=0 \rightsquigarrow s=-\frac{5}{2}\ ,\ s=\frac{1}{2}$$

$$\triangleright\ \log_2 x=-\frac{5}{2} \rightsquigarrow x=2^{-\frac{5}{2}}=\frac{1}{2^{5/2}}=\frac{1}{4\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{\sqrt{2}}{8}$$

$$\triangleright\ \log_2 x=\frac{1}{2} \rightsquigarrow x=2^{1/2}=\sqrt{2}$$

$$2^{1/2}\cdot 2^{1/2}\cdot 2^{1/2}\cdot 2^{1/2}\cdot 2^{1/2}$$

Acc.

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n 395

$$(\log_2 x)^3-\frac{1}{2}(\log_2 x^2)^2-4\log_2 x^2=0 \qquad \text{C.E.}\quad x>0$$

$$(\log_2 x)^3-\frac{1}{2}(2\log_2 x)^2-4(2\log_2 x)=0 \qquad \log_2 x=v$$

$$v^3-2v^2-8v=0$$

$$v(v^2-2v-8)=0$$

$$v(v-4)(v+2)=0 \qquad v=-2\ ,\ v=0\ ,\ v=4$$

$$\log_2 x=-2 \rightsquigarrow x=2^{-2}=\frac{1}{4}$$

$$\log_2 x=0 \rightsquigarrow x=2^0=1$$

$$\log_2 x=4 \rightsquigarrow x=2^4=16$$

Accettabili

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n 394 :

$$\sqrt{\log_{\frac{1}{2}} x+5}=2+\sqrt{\log_2 x-1}$$

$$\text{C.E.}\quad \begin{cases} x>0 \quad (\text{dai } \log) \\ \log_{\frac{1}{2}} x+5\geq 0 \\ \log_2 x-1\geq 0 \end{cases}$$

$$\log_{\frac{1}{2}} x+5=4+\log_2 x-1+4\sqrt{\log_2 x-1}$$

$$\frac{\log_2 x}{\log_2 \frac{1}{2}}=\frac{\log_2 x}{-1}=-\log_2 x$$

$$\begin{cases} x>0 \\ \log_{\frac{1}{2}} x\geq -5 \\ \log_2 x\geq 1 \end{cases} \qquad \begin{cases} x>0 \\ x\leq \frac{1}{2}^{-5}=2^5 \\ x\geq 2 \end{cases}$$

$$\rightsquigarrow \boxed{2\leq x\leq 32}$$

$$-\log_2 x + 2 - \log_2 x = 4\sqrt{\log_2 x - 1}$$

$$2 - 2\log_2 x = 4\sqrt{\log_2 x - 1}$$

$$1 - \log_2 x = 2\sqrt{\log_2 x - 1} \rightsquigarrow 1 - \log_2 x \geq 0$$

$$\log_2 x \leq 1 \rightsquigarrow \boxed{x \leq 2}$$

Oss di Maria: Dato che le C.E. mi vincolano al solo valore possibile $x = 2$, provo quello e chiudo il problema

Provo dunque $x = 2$

$$1 - \log_2 2 = 2\sqrt{\log_2 2 - 1}$$

$$1 - 1 = 2\sqrt{1-1} \qquad 0 = 0 \rightsquigarrow x = 2 \text{ è soluzione}$$