EQUAZIONI LOGARITMICHE

284 $\log_3(x^2+2x)=1$ $[-3;1]$

C.E.

$x^2+2x>0$

$x(x+2)>0$

$x<-2 \vee x>0$

$\log_3(x^2+2x)=\log_3 3$

$x^2+2x=3$

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

$(x-1)(x+3)=0$

$x=1 \vee x=-3$ ← DOPO CONTROLLO C.E.

305 $\log x-\log(x+1)=\log 2-\log 5$ $\left[\frac{2}{3}\right]$

C.E.

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

$\log\frac{x}{x+1}=\log\frac{2}{5}$

$\frac{x}{x+1}=\frac{2}{5}$

$5x=2(x+1)$

$5x-2x=2$

$3x=2 \Rightarrow \boxed{x=\frac{2}{3}}$

313 $\log_7(x-3) = \log_7(x^2-3x)$ [impossibile]

$\begin{cases} x-3>0 \\ x^2-3x>0 \end{cases}$ $\begin{cases} x>3 \\ x(x-3)>0 \end{cases}$ $\begin{cases} x>3 \\ x<0 \vee x>3 \end{cases}$ $\Rightarrow$ C.E. $x>3$

$x-3 = x^2-3x$

$x^2-4x+3=0$

$(x-3)(x-1)=0$ $\nearrow x=1$ N.A. $\vee$ $\searrow x=3$ N.A.

EQ. IMPOSSIBILE

314 $\log_{\frac{1}{2}}(x^2-4x)+\log_2 2x-1=0$ [5]

C.E. $\begin{cases} x^2-4x>0 \\ 2x>0 \end{cases}$ $\begin{cases} x(x-4)>0 \\ x>0 \end{cases}$ $\begin{cases} x<0 \vee x>4 \\ x>0 \end{cases}$ $\Rightarrow x>4$

$\log_{\frac{1}{2}}(x^2-4x)+\log_2 2x = 1$

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

$\frac{\log_2(x^2-4x)}{\log_2 \frac{1}{2}} + \log_2 2x = 1$

$\frac{\log_2(x^2-4x)}{-1} + \log_2 2x = 1$

$-\log_2(x^2-4x)+\log_2 2x = 1$

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

$\frac{2x}{x^2-4x} = 2 \Rightarrow x = x^2-4x$

$x^2-5x=0$

$x(x-5)=0$

$x=0$ N.A. $\quad \boxed{x=5}$