ECUACIONES e INECUACIONES.

Halla el valor de x en las siguientes expresiones:

$a)\ \log_x 125 = 3$	$g)\ \log x^2 = -2$
$b)\ \log_x \frac{1}{9} = -2$	$h)\ \log_x 0{,}04 = -2$
$c)\ \log x = \log 17 + \log 13$	$i)\ \log_x 2 = \frac{1}{2}$
$d)\ \log x = \log 36 - \log 9$	$j)\ \frac{1}{2}\log(2x+3) = \log x$
$e)\ \log x = 3\log 5$	$k)\ \log(x-1) + \log(x+6) = \log(3x+2)$
$f)\ \log x = 4\log 2 - \frac{1}{2}\log 25$	

Resuelve las siguientes ecuaciones y sistemas:

1. $0.07^x = 0.03$
2. $\log 1250 - 2 = 2 - \log\left(2^{2-x}\right)^{2+x}$
3. $2\log^2 x - 9\log x + 10 = 0$
4. $\frac{3x}{2x+x^2} - \frac{1}{x} + \frac{4}{x+2} = 0$
5. $\frac{x-\sqrt{6}}{\sqrt{3}+x} = \frac{\sqrt{3}-x}{2x^2\left(x+\sqrt{6}\right)}$
6. $2(2x-1)^{1/2} + (2x+1)^{1/2} = (2x-1)^{-1/2}$
7. $\begin{cases} (x-y)^{\log(x+y)} = 100 \\ x^2 - y^2 = 1000 \end{cases}$
8. $\frac{21}{\sqrt{6x+1}} - \sqrt{6x+1} = 2\sqrt{3x}$
9. $\log(x+1) + 2\log 2 = \log(4x-1) - \log(x-1)$
10. $\begin{cases} x^3 - y^2 = 0 \\ y\log x - x\log y = 0 \end{cases}$
11. $\sqrt[x+15]{2^{x-5}} = \frac{1}{4}\sqrt[x-5]{8^{x+5}}$
12. $2\log x + 3\ln x = 5$
13. $\begin{cases} \log \sqrt[x]{(x+y)} = \log 2 \\ \log(x+y) + x\log 3 = 7\log 6 \end{cases}$
14. $\log x + \log_{100} x = \frac{1}{2}$
15. $\begin{cases} \log_x(y-1) = 3 \\ \log_y(5-x) = \frac{1}{2} \end{cases}$
16. $3^x + 3^{2-x} = 10$
17. $5^{2x+1} - 5^{x+2} = 2500$
18. $\begin{cases} 2^x + 5^y = 9 \\ 2^{x-1} + 5^{y+1} = 9 \end{cases}$
19. $2^{1/2} + 2^{3/2}x^{-1/2} = (2x)^{1/2}$
20. $7^{2x+2} - 9.7^{x+1} + 14 = 0$

Resuelve las siguientes inecuaciones:

21. $x^3 - x^2 - 4x + 4 < 0$
22. $\frac{9-x^2}{x^2-x-1} \geq 0$
23. $\frac{x^2+4}{x^2-4} - \frac{1}{x-2} > \frac{x+3}{x+2}$
24. $\log_3 x > \log_9(5x-4)$

Resuelve las siguientes ecuaciones y sistemas:

$2^{4x}-2^{2x}-12=0$	$\log 2+\log(x-3)=\log\sqrt{2x}$	$3\log x-\log\left(2x^2+x-2\right)=0$
$4\log x-\log\left(x^2-\frac{4}{5}\right)=\log 5$	$3^{x+1}-2\cdot 3^x-2\cdot 3^{x-1}=81$	$\log(3x+5)-\log(2x+1)=1-\log 5$
$\begin{cases}\log x+5\log y=7\\5\log x-\log y=4\end{cases}$	$\begin{cases}\log_x(4-y)=\frac{1}{2}\\\log_y(4+x)=2\end{cases}$	$\begin{cases}\log(x+y)-\log(x-y)=\log 5\\\frac{2^x}{2^y}=2\end{cases}$
$\begin{cases}2^x+2^y=10\\2^{x-y}=4\end{cases}$	$x=\log_2\left(3^{\log_3 2}\right)$	$2\log x=1+\log(x-0,9)$
$\begin{cases}5^x=5\cdot 25^{y-1}\\4^x=4\cdot 2^{2y}\end{cases}$	$(\log_5 x)^2-\log_5 x^2=-1$	$1+2+2^2+2^3+\cdots+2^x=255$
$\log_x\sqrt[3]{7}=\frac{2}{3}$	$x=\log_2 3\cdot\log_3 2$	$x=\log_2\left(100^{\log 2}\right)$

Resuelve:

$\frac{5}{x^2-x-6}=\frac{3}{x^2-4}+\frac{3}{2x^2-10x+12}$	$\frac{x^2-32}{4}+\frac{28}{x^2-9}=0$	$\frac{(2x+3)\cdot(2x-1)}{4x^2+1}\le 0$
$x^3-x^2+x+2\ge 0$	$\frac{3x^2-2x}{3x+1}+\frac{1}{2x}<x-1$	$\frac{x-1}{3}>\frac{2}{x}$
$\frac{\lvert 4-3x\rvert}{2}<3$	$\left\lvert 2+\frac{x}{2}\right\rvert>3$	$(4x-1)\cdot(2x+2)\ge 12$