Solve $2^{x}=8$

$$
\begin{aligned}
& 2^{x}=8 \\
& x=3
\end{aligned}
$$

Solve $2^{x}=16$

$$
\begin{aligned}
& 2^{x}=16 \\
& x=4
\end{aligned}
$$

Solve $2^{x}=12$

$$
\begin{aligned}
& 2^{x}=12 \\
& \log 2^{x}=\log 12 \\
& x \log 2=\log 12 \\
& x=\frac{\log 12}{\log 2} \\
& x \approx 3.58
\end{aligned}
$$

|  |  |
| :---: | :---: |
| $\log 12 \div \log _{3} 2$ |  |
| $\log _{2}(12)$ |  |
| $\square$ | 3.584962501 |
| Wailver logab | $d / d x d 2 / 2 / x^{2} \square \square$ |

Solve $3^{x+1}=\frac{1}{27}$

$$
\begin{aligned}
& 3^{x+1}=\frac{1}{27} \\
& 3^{x+1}=\frac{1}{3^{3}} \\
& 3^{x+1}=3^{-3} \\
& x+1=-3 \\
& x=-4
\end{aligned}
$$

Solve $5^{x}=2^{x+1}$ writing your answer in the form $\frac{\ln a}{\ln b}$ where $a$ and $b$ are rational numbers
Your GDC will solve this equation
...but not leave the answer in the form $\frac{\ln a}{\ln b}$


自 Wath Rad [Norm1 d/calatbi]

```
Eq: 5 }\mp@subsup{}{}{x}=\mp@subsup{2}{}{x+1
x=0.75647079
    Lower=-9E+99
    Upper=9E+99
```

$$
\begin{aligned}
& 5^{x}=2^{x+1} \\
& \ln \left(5^{x}\right)=\ln \left(2^{x+1}\right) \\
& x \ln 5=(x+1) \ln 2 \\
& x \ln 5=x \ln 2+\ln 2 \\
& x \ln 5-x \ln 2=\ln 2 \\
& x(\ln 5-\ln 2)=\ln 2 \\
& x=\frac{\ln 2}{\ln 5-\ln 2} \\
& x=\frac{\ln 2}{\ln \frac{5}{2}}
\end{aligned}
$$

