common logarithms - Base 10 logarithm

$$
\begin{array}{rlrl}
\log _{10} 143 & =\log 143 & \begin{array}{l}
\text { - usually written without } \\
\text { the subscript } 10
\end{array} \\
\log _{10} 10 & =(1) & \log 100=2 & \log \frac{1}{10}=-1 \\
10^{n}=10 & \log 1000=3 & 10^{n}=\frac{1}{10} & \log \frac{1}{100}=-2 \\
10^{-2} & =\frac{1}{10^{2}} \\
& \log 1=0 & & =\frac{1}{100}
\end{array}
$$



$$
\begin{aligned}
& 10^{0}=1 \\
& 10^{n}=3 \\
& 10^{1}=10
\end{aligned}
$$

$$
10^{\prime}=10
$$

$$
10^{-1}=\frac{1}{10}
$$

5. $3^{n}=81=3^{4}$
6. $2^{x}=128=2^{7}$

$$
\begin{aligned}
& 3^{n}=3^{4} \\
& n=4
\end{aligned}
$$

$$
2^{x}=2^{7}
$$

$$
x=7
$$

$$
\text { 7. } \begin{gather*}
5^{x}=\frac{1}{125}=\frac{1}{5^{3}}=5^{-3} \\
5^{x}=5^{-3} \\
x=-3
\end{gather*}
$$

$$
\begin{array}{cc|c|c}
\text { 8. } 3^{x}=11 & 3^{\prime}=3 & \text { 9. } 4^{x}=15 & \begin{array}{l}
10.15^{n}=10,653 \\
\log 3^{x}=\log 11 \\
3^{2}=9 \\
x \log 4^{x}=\log 15
\end{array} \\
\begin{array}{lll}
x \log 3=\frac{\log 11}{\log 3} & 3^{3}=27 & x \log 3 \\
x=\log 4=\log 15 & \\
x=\frac{\log 15}{\log 4,653} \\
x=\frac{\log 11}{\log 3} \leftarrow \text { exact value } & n \log 15=\log 10,653 \\
x \approx 2.1827 & n=\frac{\log 10,653}{\log 15} \\
x \log 934 & n \approx 3.4245
\end{array}
\end{array}
$$



