1 Solve the equation

$$
2^{-x}=16 .
$$

(Show at least one intermediate step.)
I want to make 16 an exponential expression with base 2 ; since $16=2 \cdot 2 \cdot 2 \cdot 2$, I can do this:

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

2 Evaluate $\log _{1 / 2}$ 16. (Show at least one intermediate step not using a calculator.)
This logarithm is the unique solution $x$ to the equation $(1 / 2)^{x}=16$. Like Problem 1, I solve this by getting everything with base 2 :

$$
\begin{aligned}
\left(\frac{1}{2}\right)^{x} & =16 \\
\frac{1}{2^{x}} & =2^{4} \\
2^{-x} & =2^{4} \\
-x & =4 \\
x & =-4 .
\end{aligned}
$$

Therefore,

$$
\log _{1 / 2} 16=4
$$

3 Find the domain of the function $f$ given by

$$
f(x)=\ln (x+4) .
$$

(Show at least one intermediate step.)
I can only take the logarithm of a positive number:

$$
\begin{aligned}
x+4 & >0 \\
x & >-4 .
\end{aligned}
$$

Therefore,

$$
\operatorname{dom} f=\{x \mid x>-4\}
$$

