$$
\begin{aligned}
& \text { 17. } 948^{x-3}=13^{4 x+2} \\
& \log 948^{x-3}=\log 13^{4 x+2} \\
& (x-3) \log 91+8=(4 x+2) \log 13 \\
& x \log 948-3 \log 948=4 x \log 13+2 \log 13 \\
& -4 x \log 13+3 \log 948-1 / x \log 13 \\
& x \log 948-4 x \log 13=2 \log 13+3 \log 948 \\
& x(\log 948-4 \log 13)=2 \log 13+3 \log 948 \\
& x=\frac{2 \log 13+3 \log 948}{\log 948-4 \log 13}=\frac{\log 13^{2}+\log 948^{3}}{\log 948-\log 13^{4}}=\frac{\log \left(13^{2} \cdot 948^{3}\right)}{\log \left(\frac{948}{13^{4}}\right)} \\
& x \approx-7.5447
\end{aligned}
$$

22. $\log _{4}(1.6)^{2}=2^{\log _{4} 1.6}=2 \frac{10516}{154}$


$$
\begin{array}{ll}
\text { 13. } 8.2^{n-3} & =42.5 \\
\begin{array}{ll}
\log 8.2^{x-3} & =\log 42.5 \\
(x-3) \log 8.2 & =\log 42.5 \\
x-3 & =\frac{\log 42.5}{\log 8.2}
\end{array} & \\
x=\frac{\log 8.2-3 \log 8.2: \log 42.5}{\log 8.2}+3 & x \log 8.2=\log 42.5+3 \log 8.2 \\
x & x=\frac{\log 47.5+3 \log 8.2}{\log 8.2}
\end{array}
$$

10. $4^{3 p}=10$

$$
\begin{array}{ll}
4^{3 p}=10 & \log (10)(3 \log (4)) \\
\log 4^{3 p}=\log 10
\end{array}
$$

$3 p \log 4=\log 10$

$$
\begin{aligned}
& p=\frac{\log 10}{3 \log 4} \\
& \frac{\log \sqrt{5}}{\log b}=\frac{\log 5^{\frac{1}{2}}}{\log 6}=\frac{\frac{1}{2} \log 5}{\log 6}=\frac{\log 5}{2 \log 6}
\end{aligned}
$$

