$$
\begin{aligned}
& \text { (23) } \log _{6} 24-\log _{6} x^{2}=2 \\
& \log _{6} \frac{24}{x^{2}}=2 \\
& 6^{2}=\frac{24}{x^{2}} \quad \text { exp.form. } \\
& 36 x^{2}=24 \\
& \sqrt{x^{2}}=\frac{24}{36}=\sqrt{\frac{2}{3}}=\frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}= \\
& x=\frac{\sqrt{6}}{3} \\
& \text { (7) }(0,4)\binom{-2,16)}{x, y} \quad y=a(b)^{x} \\
& (0, a) \\
& \left.\begin{array}{rl}
16 & =4(b)^{-2} \\
4 & =b^{-2}
\end{array}\right\} y=4\left(\frac{1}{2}\right)^{x} \\
& 4=\frac{1}{b^{2}} \\
& 4 b^{2}=1 \\
& \sqrt{b^{2}}=\sqrt{\frac{1}{4}}=\frac{\sqrt{1}}{\sqrt{4}} \\
& b=\frac{1}{2}
\end{aligned}
$$

$$
\text { (8) } \begin{aligned}
7^{3 x+4} & =7^{8-x} \\
3 x+4 & =8-x \\
4 x+4 & =8 \\
4 x & =4 \\
x & =1
\end{aligned}
$$

(25)

$$
8^{1}=m^{2}+m-12
$$

$$
0=m^{2}+m-20
$$

$$
m=\frac{-1 \pm \sqrt{1^{2}-4(1)(-20)}}{2(1)} \quad(x+5)(x-4)=0
$$

$$
m=\frac{-1 \pm \sqrt{81}}{2}=\frac{-1 \pm 9}{2}=\frac{-1+9}{2}, \frac{-1-9}{2}
$$

$$
m=4,+5
$$

$$
\log _{8}(m-3)+\log _{8}(m+4)=1
$$

$$
\log _{8} 1+\log _{8} 8
$$

$$
\frac{\log 1}{\log 8}+\frac{\log 8}{\log 8}
$$

30

$$
\begin{gathered}
2 x \log 4=(x+1) \log 9 \\
2 \times \log 4=x \log 9+\log 9 \\
2 \times \log 4-x \log 9=\log 9 \\
x(2 \log 4-\log 9)=\log 9 \\
x=\frac{\log 9}{2 \log 4-\log 9}=\frac{\log 9}{\log 4^{2}-\log 9}=\frac{\log 9}{\log \frac{16}{9}}
\end{gathered}
$$

