DATA

f) $\log^3 x = 4 \cdot \log x \rightarrow (\log x)^3 = 4 \cdot \log x$

$\log x = K$

$K^3 = 4K \rightarrow K^3 - 4K = 0$

$K(K+2)(K-2) = 0 \rightsquigarrow K = 0$, $K+2=0$

$(K^2+2K)(K-2)$ $\quad\quad$ $K = -2$

$K^3 - 2K^2 + 2K^2 - 4K$ $\quad\quad$ $K-2=0$

$K^3 - 4K$ $\quad\quad$ $K = 2$

$\log x = K$, então $\log x = 0 \rightarrow x = 10^0 = x = 1$

$\log x = -2 \rightarrow x = 10^{-2} \rightarrow \frac{1}{100}$

$\log x = 2 \rightarrow 10^2 = x \rightarrow x = 100$

$S = \left\{1, \frac{1}{100}, 100\right\}$

B.189. Resolução:

$2 \cdot \log(\log x) = \log(7 - 2 \cdot \log x) - \log 5$.

$\log(\log x)^2 = \log(7 - 2 \cdot \log x) - \log 5$.

$\log(\log x)^2 = \log\left[\frac{(7 - 2 \cdot \log x)}{5}\right]$

considerando $\log x = K$

$\log K^2 = \log\left[\frac{(7 - 2 \cdot \log x)}{5}\right]$

$\rightarrow K^2 = \frac{7 - 2 \cdot K}{5}$

$5K^2 = 7 - 2K$

$5K^2 + 2K - 7 = 0$

$\Delta = 2^2 - 4 \cdot 5 \cdot (-7)$

$\Delta = 4 + 140 \rightarrow \Delta = 144$

$K = \frac{-2 \pm 12}{10}$ $\quad$ $K_1 = \frac{10}{10} = 1$ $\quad$ $K_2 = -\frac{14}{10}$