DATA

g) $\log_2 \{2 + 3 \cdot \log_3 [1 + 4 \cdot \log_4 (5x+1)]\} = 3$

$2^3 = \{2 + 3 \cdot \log_3 [1 + 4 \cdot \log_4 (5x+1)]\}$

$8 = 2 + 3 \cdot \log_3 [1 + 4 \cdot \log_4 (5x+1)]$

$\frac{6}{3} = \frac{\cancel{3} \cdot \log_3 [1 + 4 \cdot \log_4 (5x+1)]}{\cancel{3}} \rightarrow 2 = \log_3 (1 + 4 \cdot \log_4 (5x+1))$

$\rightarrow 3^2 = 1 + 4 \cdot \log_4 (5x+1) \rightarrow 9 = 1 + 4 \cdot \log_4 (5x+1) \rightarrow$

$8 = 4 \cdot \log_4 (5x+1) \rightarrow \frac{8}{4} = \frac{\cancel{4} \cdot \log_4 (5x+1)}{\cancel{4}} \rightarrow$

$2 = \log_4 (5x+1) \rightarrow 4^2 = 5x+1 \rightarrow 5x+1 = 16 \rightarrow$

$5x = 15 \rightarrow x = 15/5 \rightarrow x = 3 \quad S = \{3\}_{//}$

B.172. Resolução:

3) $\log_4^2 x - 2 \cdot \log_4 x - 3 = 0 \rightarrow (\log_4 x)^2 - 2 \cdot \log_4 x - 3 = 0$

considerando: $\log_4 x = K$ $\quad K^2 - 2 \cdot K - 3 = 0$

$K^2 - 2K - 3 = 0$

$\Delta = (-2)^2 - 4 \cdot 1 \cdot (-3) \rightarrow \Delta = 4 + 12 \rightarrow \Delta = 16$

$K = \frac{2 \pm 4}{2}$ $\quad K_1 = 3$, $\quad K_2 = -1$

Como $\log_4 x = K$, temos $\log_4 x = 3$

$x = 64$, $\quad \log_4 x = -1 \rightarrow 4^{-1} = x$

$x = \frac{1}{4}$

$S = \{64, 1/4\}_{//}$