DATA

$3^{2x} \cdot 14 \leq 42 \cdot 9 \rightarrow 3^{2x} \leq \frac{42 \cdot 9}{14} \rightarrow 3^{2x} \leq \frac{21 \cdot 9}{7} \rightarrow$

$3^{2x} \leq 3 \cdot 9 \rightarrow 3^{2x} \leq 3^1 \cdot 3^2 \rightarrow 3^{2x} \leq 3^3 \rightarrow 2x \leq 3$

$a > 1$

$x \leq \frac{3}{2}$

$S = \{x \in \mathbb{R} / x \leq 3/2\}$

B101. Resolução:

a) $4^x - 6 \cdot 2^x + 8 < 0 \rightarrow (2^2)^x - 6 \cdot 2^x + 8 < 0 \rightarrow$

$\rightarrow (2^x)^2 - 6 \cdot 2^x + 8 < 0 \rightarrow y^2 - 6 \cdot y + 8 < 0$

$2^x = y$

$\Delta = (-6)^2 - 4 \cdot 1 \cdot 8$

$\Delta = 36 - 32$

$\Delta = 4$

$y = \frac{6 \pm 2}{2}$ $\quad y_1 = 4$ $\quad y_2 = 2$

$2^x < 4 \quad 2^x < 2^2 \quad x < 2$

$2^x > 2 \quad x > 1$

+ ○ − ○ + (2, 4)

$y > 2$ e $y < 4$

$2 < y < 4$

$S = \{x \in \mathbb{R} / 1 < x < 2\}$

c) $5^{2x+1} - 26 \cdot 5^x + 5 \leq 0 \rightarrow 5^{2x} \cdot 5^1 - 26 \cdot 5^x + 5 \leq 0 \rightarrow$

$(5^x)^2 \cdot 5^1 - 26 \cdot 5^x + 5 \leq 0 \rightarrow 5^x = y \rightarrow y^2 \cdot 5 - 26 \cdot y + 5 \leq 0$

$5y^2 - 26y + 5 \leq 0 \rightarrow$

$\Delta = (-26)^2 - 4 \cdot 5 \cdot 5$

$\Delta = 676 - 100$

$\Delta = 576$

$y = \frac{26 \pm \sqrt{576}}{10}$ $\quad y_1 = \frac{26+24}{10} = 5$ $\quad y_2 = \frac{26-24}{10} = \frac{2}{10} = \frac{1}{5}$

+ ○ − ○ + ($\frac{1}{5}$, 5)

$\frac{1}{5} \leq x \leq 5$

$5^x \leq 5 \quad x \leq 1$

$5^x \geq \frac{1}{5} \quad 5^x \geq 5^{-1} \quad x \geq -1$

$S = \{x \in \mathbb{R} / -1 \leq x \leq 1\}$