

DATA

$$d) 2^{2x} - 2^{x+1} - 8 \leq 0 \rightarrow (2^x)^2 - 2^x \cdot 2^1 - 8 \leq 0$$

$$2^x = y \rightarrow y^2 - 2y - 8 \leq 0$$

$$f(x) = y^2 - 2y - 8$$

$$y^2 - 2y - 8 = 0$$

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

$$\Delta = 4 + 32$$

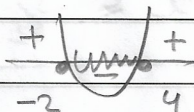
$$\Delta = 36$$

$$\sqrt{\Delta} = 6$$

$$y = \frac{2 \pm 6}{2}$$

$$y_1 = 4$$

$$y_2 = \frac{-4}{2} = -2$$



$$2^x > -2$$

$$2^x \leq 4$$

$$-2 < y \leq 4$$

X

$$2^x \leq 2^2$$

$$x \leq 2$$

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

$$f) 2^x(2^x + 1) < 2 \rightarrow 2^{2x} + 2^x < 2 \rightarrow (2^x)^2 + 2^x - 2 < 0 \rightarrow$$

$$y^2 + y - 2 < 0$$

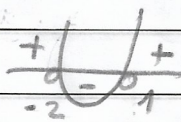
$$\Delta = 1^2 - 4 \cdot 1 \cdot (-2)$$

$$\Delta = 1 + 8 \quad \Delta = 9 \quad \sqrt{\Delta} = 3$$

$$y = \frac{-1 \pm 3}{2}$$

$$y_1 = 1$$

$$y_2 = -2$$



$$2^x = y$$

$$-2 < y < 1$$

$$2^x > -2$$

X

$$2^x < 1$$

$$2^x < 2^0$$

$$x < 0$$

$$S = \{x \in \mathbb{R} / x < 0\}$$

B.103. Resolução:

$$x^{2x^2 - 9x + 4} < 1 \text{ em } \mathbb{R}_+$$

Reais não negativos

$$\{0, 1, 2, \dots\}$$

É necessário considerar 3 casos: