

DATA

ATAQ

$$2^{2x} \left(4 - 2 + 1 - \frac{1}{2} - \frac{1}{4} \right) \geq 144$$

$$2^{2x} \left(\frac{3}{1} - \frac{1}{2} - \frac{1}{4} \right) \geq 144$$

$$2^{2x} \left(\frac{12 - 2 - 1}{4} \right) \geq 144$$

$$2^{2x} \cdot \frac{9}{4} \geq 2^4 \cdot 3^2 \rightarrow 2^{2x} \cdot 9 \geq 2^2 \cdot 2^4 \cdot 3^2$$

$$\rightarrow 2^{2x} \geq \frac{2^2 \cdot 2^4 \cdot 3^2}{9} \Rightarrow 2^{2x} \geq 2^2 \cdot 2^4$$

$$2^{2x} \geq 2^6$$

$$a > 1$$

$$2x \geq 6$$

$$\boxed{x \geq 3}$$

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

$$1) 3^{2x+1} - 9^x - 3^{2x-1} - 9^{x-1} \leq 42$$

$$3^{2x+1} - (3^2)^x - 3^{2x-1} - (3^2)^{x-1} \leq 42$$

$$3^{2x+1} - 3^{2x} - 3^{2x-1} - 3^{2x-2} \leq 42$$

$$3^{2x} \cdot 3^1 - 3^{2x} - 3^{2x} \cdot 3^{-1} - 3^{2x} \cdot 3^{-2} \leq 42$$

$$3^{2x} (3 - 1 - 3^{-1} - 3^{-2}) \leq 42$$

$$3^{2x} \left(2 - \frac{1}{3} - \frac{1}{3^2} \right) \leq 42 \rightarrow 3^{2x} \left(\frac{5}{3} - \frac{1}{9} \right) \leq 42$$

$$\rightarrow 3^{2x} \left(\frac{15 - 1}{9} \right) \leq 42 \rightarrow 3^{2x} \cdot \frac{14}{9} \leq 42$$