241) 16/2/2018

C.E. nessuna!

$$|8^x - 2| = \underbrace{\sqrt{2^{3x}}}_{\text{sempre positivo } (\forall x)}$$

NEL NOSTRO CASO

$|f(x)| = g(x)$ se so che $g(x) \geq 0 \ \forall x$

$\downarrow$

$f^2(x) = g^2(x)$

$|f(x)| = g(x)$

$$\begin{cases} f(x) = \pm g(x) \\ g(x) \geq 0 \end{cases}$$

IN GENERALE

$$(8^x - 2)^2 = 2^{3x}$$

$$(8^x - 2)^2 = 8^x \qquad 8^x = t$$

$$(t-2)^2 = t$$

$$t^2 + 4 - 4t - t = 0$$

$$t^2 - 5t + 4 = 0$$

$$(t-4)(t-1) = 0$$

$t = 4 \rightarrow 8^x = 4$

$t = 1 \rightarrow 8^x = 1$

$8^x = 4$

$2^{3x} = 2^2$

$3x = 2$

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

$\vee$

$8^x = 1$

$x = 0$

$$\boxed{x = 0 \ \vee \ x = \frac{2}{3}}$$

pg. 534 N 257

$$\begin{cases} 3^x + 3^y = 10 \\ 3^{x+1} - 3^y = -6 \end{cases} \qquad \begin{cases} 3^y = 10 - 3^x \\ 3^{x+1} - 10 + 3^x = -6 \end{cases}$$

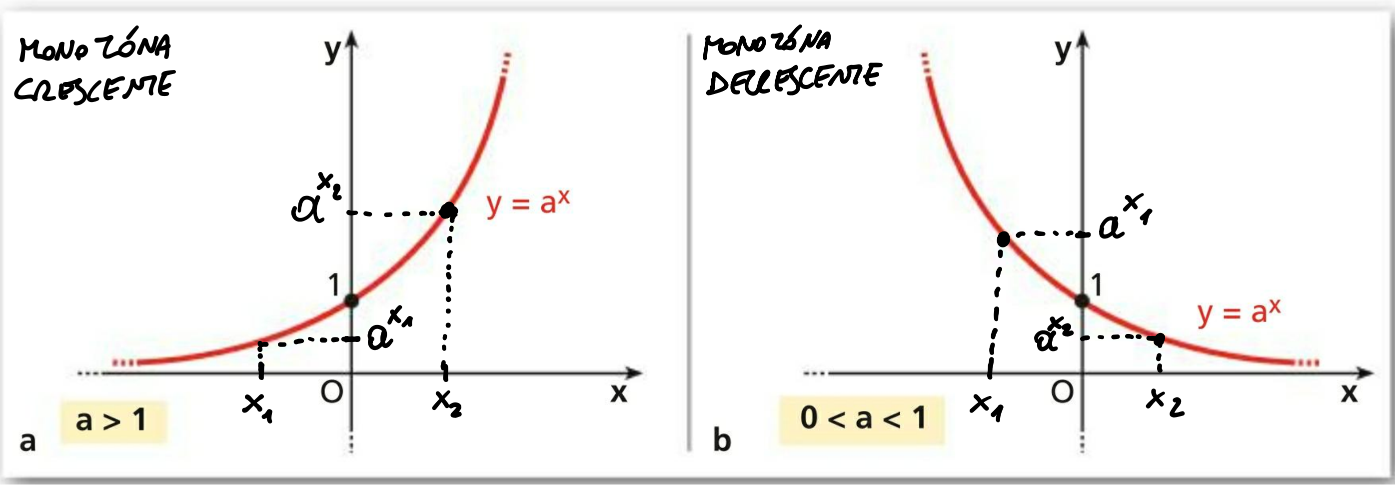
$$3 \cdot 3^x + 3^x = 4 \longrightarrow 3^x(3+1) = 4$$

$$\cancel{4} \cdot 3^x = \cancel{4}$$

$$3^x = 1 \rightarrow x = 0 \qquad \begin{cases} x = 0 \\ 3^y = 10 - 1 \end{cases} \qquad \begin{cases} x = 0 \\ 3^y = 9 \end{cases}$$

$$\boxed{\begin{cases} x = 0 \\ y = 2 \end{cases}} \qquad \boxed{(0, 2)}$$

DISEQUAZIONI ESPONENZIALI



$x_1 < x_2 \iff a^{x_1} < a^{x_2}$

$x_1 < x_2 \iff a^{x_1} > a^{x_2}$

$2^x < 2^3 \rightarrow x < 3$

perché la base è > 1

$\boxed{2 > 1}$

$\left(\frac{1}{2}\right)^x < \left(\frac{1}{2}\right)^3 \rightarrow x > 3$

perché la base è compresa fra 0 e 1

$\boxed{0 < \frac{1}{2} < 1}$

pg. 595 N 275

$\left(\frac{1}{5}\right)^{2x+1} < 625$

OPPURE

$5^{-2x-1} < 5^4$

PERCHÉ $5>1$

$-2x-1 < 4$

$-2x < 5$

$\boxed{x > -\frac{5}{2}}$

$\left(\frac{1}{5}\right)^{2x+1} < \left(\frac{1}{5}\right)^{-4}$

PERCHÉ $0<\frac{1}{5}<1$

$2x+1 > -4$

$2x > -5$

$\boxed{x > -\frac{5}{2}}$

279)

$$2\cdot 3^{2x-1} + 9^{x+1} - 3^{2x+1} \leq \frac{60}{\sqrt[5]{3}}$$

$$2\cdot 3^{2x}\cdot 3^{-1} + 3^{2x}\cdot 3^{2} - 3^{2x}\cdot 3 \leq \frac{60}{\sqrt[5]{3}} \qquad t = 3^{2x}$$

$$\frac{2}{3}t + 9t - 3t \leq \frac{60}{\sqrt[5]{3}}$$

$$\frac{\overset{1}{\cancel{20}}}{3}t \leq \frac{\overset{3}{\cancel{60}}}{3^{1/5}} \qquad t \leq \frac{3^{2}}{3^{1/5}}$$

$$t \leq 3^{2-\frac{1}{5}}$$

$$3^{2x} \leq 3^{\frac{9}{5}}$$

$$2x \leq \frac{9}{5} \qquad \boxed{x \leq \frac{9}{10}}$$