10/1/2018

PAG. 437 N 142

$$7^{x+2} > 49$$

$$7^{x+2} > 7^2 \qquad x+2 > 2$$

$$\boxed{x > 0}$$

N 143

$$\left(\frac{1}{4}\right)^{x-1} < 64 \qquad \left(\frac{1}{4}\right)^{x-1} < 4^3$$

$$\left(\frac{1}{4}\right)^{x-1} < \left(\frac{1}{4}\right)^{-3} \quad 0 < \frac{1}{4} < 1$$

$$x-1 > -3$$

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

N 141

$$3^{2x+2} < \frac{1}{3} \qquad 3^{2x+2} < 3^{-1} \qquad 2x+2 < -1$$

$$2x < -3$$

$$\boxed{x < -\frac{3}{2}}$$

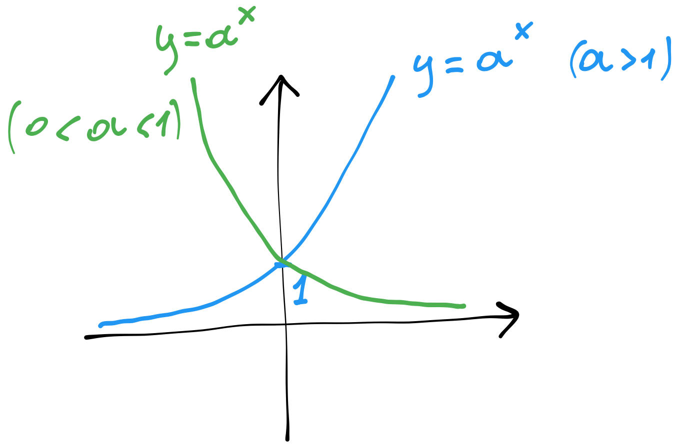
$$\left(\frac{1}{3}\right)^{-2x-2} < \frac{1}{3} \quad \text{perché } 0 < \frac{1}{3} < 1$$

$$-2x-2 > 1$$

COSA IMPORTANTE DA RICORDARE !!

$$\boxed{a^x > 0} \quad \forall x \in \mathbb{R}$$

$(a > 0)$



$3^x > -1 \quad \forall x \in \mathbb{R}$

$2^x > 0 \quad \forall x \in \mathbb{R}$

$\left(\frac{1}{2}\right)^x < 0 \quad \nexists x \in \mathbb{R}$

IMPOSSIBILE

$5^x < -2 \quad \nexists x \in \mathbb{R}$

IMPOSSIBILE

$\left(\frac{1}{3}\right)^x = 0 \quad \nexists x \in \mathbb{R}$

IMPOSSIBILE

PAG. 438 N 156

$$34\left(\frac{3}{5}\right)^x < 25\left(\frac{9}{25}\right)^x + 9$$

$$34\left(\frac{3}{5}\right)^x < 25\left[\left(\frac{3}{5}\right)^2\right]^x + 9$$

$$34\left(\frac{3}{5}\right)^x < 25\left[\left(\frac{3}{5}\right)^x\right]^2 + 9 \qquad \left(\frac{3}{5}\right)^x = t$$

$$34t < 25t^2 + 9$$

$$-25t^2 + 34t - 9 < 0 \qquad a = 25 \quad b = -34 \quad c = 9$$

$$25t^2 - 34t + 9 > 0 \qquad \beta = \frac{b}{2} = -17$$

$$\frac{\Delta}{4} = \beta^2 - ac = 289 - 225 = 64 > 0$$

$$t_{1,2} = \frac{-\beta \pm \sqrt{\beta^2 - ac}}{a} =$$

$$= \frac{17 \pm 8}{25} = \begin{cases} 1 \\ \frac{9}{25} \end{cases}$$

$$t < \frac{9}{25} \quad \vee \quad t > 1$$

$$\left(\frac{3}{5}\right)^x < \frac{9}{25} \quad \vee \quad \left(\frac{3}{5}\right)^x > 1$$

$$\left(\frac{3}{5}\right)^x < \left(\frac{3}{5}\right)^2 \quad \vee \quad \left(\frac{3}{5}\right)^x > \left(\frac{3}{5}\right)^0$$

$$x > 2 \quad \vee \quad x < 0$$

$$\boxed{x < 0 \quad \vee \quad x > 2}$$

N 170

$$2\cdot 3^{2x} - 2\cdot 3^{x+2} - 8 \geq 1 - 3^{x}$$

$$2\cdot 3^{2x} - 2\cdot 3^{x}\cdot 3^{2} - 8 - 1 + 3^{x} \geq 0 \qquad 3^{x} = t$$

$$2t^{2} - 18t - 9 + t \geq 0$$

$$2t^{2} - 17t - 9 \geq 0 \qquad \Delta = (-17)^{2} - 4\cdot 2\cdot (-9) =$$

$$= 289 + 72 = 361 = 19^{2}$$

$$t = \frac{17 \pm 19}{4} = \begin{cases} 9 \\ -\frac{1}{2} \end{cases}$$

$$t \leq -\frac{1}{2} \quad \vee \quad t \geq 9$$

$$3^{x} \leq -\frac{1}{2} \quad \vee \quad 3^{x} \geq 3^{2}$$

IMPOSSIBILE

$$\boxed{x \geq 2}$$

167

$$t = 2^x$$

$$2(4^x + 1) < 5 \cdot 2^x$$

$$2(t^2 + 1) < 5t$$

$$2t^2 + 2 - 5t < 0$$

$$2t^2 - 5t + 2 < 0$$

$$\Delta = 25 - 16 = 9$$

$$t = \frac{5 \pm 3}{4} = \begin{cases} 2 \\ \frac{1}{2} \end{cases}$$

$$\frac{1}{2} < t < 2$$

$$\frac{1}{2} < 2^x < 2$$

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

$$\downarrow$$

$$-1 < x < 1$$

ATTENZIONE! WARNING! ACHTUNG! ¡ATENCIÓN!

Se fosse stato

$$-\frac{1}{2} < t < 2$$

$$\underbrace{-\frac{1}{2} < 2^x}_{\text{VERA SEMPRE!}} \boxed{2^x < 2}$$

devo considerare solo questa parte!

$$2^x < 2^1 \qquad \boxed{x < 1}$$