EQUAZIONI ESPONENZIALI

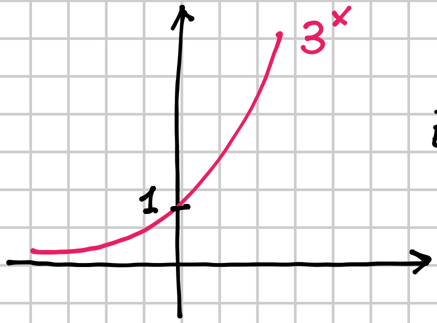
136 $3^{x+1} = 27$

$$3^{x+1} = 3^3$$

$$x+1 = 3$$

$$\boxed{x = 2}$$

$f(x) = 3^x \quad f: \mathbb{R} \to \mathbb{R}$



È INIETTIVA

$$f(x_1) = f(x_2)$$
$$\Downarrow$$
$$x_1 = x_2$$

cioè $3^{x_1} = 3^{x_2} \Rightarrow x_1 = x_2$

137 $5^{2x} = \dfrac{1}{25}$ ← va scritto come potenza di 5

$$5^{2x} = 5^{-2} \qquad 2x = -2 \qquad \boxed{x = -1}$$

144 $3^x = \dfrac{9 \cdot \sqrt{3}}{\sqrt[4]{3}}$

$$3^x = \frac{3^2 \cdot 3^{\frac{1}{2}}}{3^{\frac{1}{4}}}$$

$$3^x = 3^{2+\frac{1}{2}-\frac{1}{4}}$$

$$x = 2 + \frac{1}{2} - \frac{1}{4} = \frac{8+2-1}{4} = \frac{9}{4} \Rightarrow x = \frac{9}{4}$$

163 $\dfrac{2^{x} \cdot 2^{x+1} \cdot 2^{x+2}}{8 \cdot 2^{x+3}} = \sqrt[5]{4} \cdot \sqrt[3]{2}$ $\left[\dfrac{28}{15}\right]$

$$\frac{2^{x+x+1+x+2}}{2^{3} \cdot 2^{x+3}} = 2^{\frac{2}{5}} \cdot 2^{\frac{1}{3}}$$

$$2^{3x+\cancel{3}-\cancel{3}-(x+3)} = 2^{\frac{2}{5}+\frac{1}{3}}$$

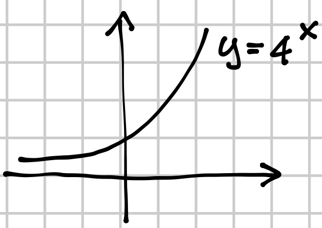
$$3x - x - 3 = \frac{6+5}{15}$$

$$2x = \frac{11}{15} + 3$$

$$2x = \frac{56}{15} \qquad \boxed{x = \frac{28}{15}}$$

151 $4^{x+2} = \underbrace{1 - \sqrt{2}}_{>0}$ [impossibile]

$4^{t} > 0 \ \forall t \in \mathbb{R}$ quindi l'uguaglianza è impossibile!



182 $3^{x+2} = 2^{2x+4}$ $[-2]$

$$3^x \cdot 3^2 = 2^{2x} \cdot 2^4$$

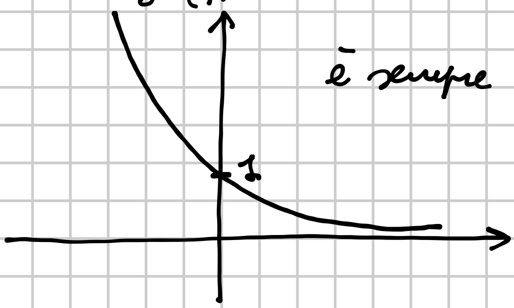
$$3^x \cdot 9 = (2^2)^x \cdot 16$$

$$3^x \cdot 9 = 4^x \cdot 16$$

$$\frac{3^x}{4^x} = \frac{16}{9}$$

$$\left(\frac{3}{4}\right)^x = \frac{16}{9}$$

$y = \left(\frac{3}{4}\right)^x$



è sempre INIETTIVA!

$$\left(\frac{3}{4}\right)^x = \left(\frac{4}{3}\right)^2$$

$$\left(\frac{3}{4}\right)^x = \left(\frac{3}{4}\right)^{-2} \Rightarrow \boxed{x = -2}$$