

$$9 \cdot 2^x = 4 \cdot 3^x \Leftrightarrow$$

$$3^2 \cdot 2^x = 2^2 \cdot 3^x$$

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

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

$$x = 2$$

$\frac{n \cdot x}{n \cdot x}$

$$3^x \cdot 2^x = 3^2 \cdot 2^2 \Leftrightarrow$$

$$(3 \cdot 2)^x = (3 \cdot 2)^2 \Leftrightarrow$$

$$6^x = 6^2$$

$$x = 2$$

$$3^2 \cdot 3^x = 2^2 \cdot 2^x \Leftrightarrow$$

$$3^{2+x} = 2^{2+x} \Leftrightarrow$$

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

$$\left(\frac{3}{2}\right)^{2+x} = \left(\frac{3}{2}\right)^0 \Leftrightarrow 2+x=0 \Leftrightarrow$$

$$x = -2$$

Idiom 2a

$$a^{x_1} = a^{x_2} \Leftrightarrow x_1 = x_2$$

(if $a > 0, a \neq 1$)

$$3 \cdot 2^x = 2 \cdot 3^x \Leftrightarrow \frac{2^x}{3^x} = \frac{2}{3} \Leftrightarrow \left(\frac{2}{3}\right)^x = \left(\frac{2}{3}\right)^1 \Leftrightarrow$$

$$x = 1$$

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

$$a^0 = 1$$

for $a \neq 0$

$$0^0 = ?$$

$$\Leftrightarrow \left(\frac{2}{3}\right)^{x-1} = \left(\frac{2}{3}\right)^0$$

$$x-1=0$$

$$x=1$$

$$2^{x^2+1} = 0 \text{ αδυναμ}$$

δύναμη ο αριθμός 2 ποτέ δεν γίνεται 0
αδύναμη δύναμη 2 ποτέ.

$$2^{x^2+1} = 1 \quad (=)$$

$$2^{x^2+1} = 2^0 \quad (=) \quad x^2+1=0 \quad (=)$$

$$x^2 = -1 \text{ αδυναμ}$$

$$x^2 - 1 = (x-1)(x+1)$$

Εκθετικές ανισότητες:

Θεωρία: Γνωρίζουμε ότι $f(x) = a^x$, με $a > 1$ είναι ↑ στο $\mathbb{R}$.
→ $g(x) = b^x$, με $0 < b < 1$ είναι ↓ στο $\mathbb{R}$.

Συνήσεις: $\forall x_1 < x_2 \iff 5^{x_1} < 5^{x_2}$ διότι $5 > 1$

$\forall x_1 < x_2 \iff \left(\frac{1}{5}\right)^{x_1} > \left(\frac{1}{5}\right)^{x_2}$ $0 < \frac{1}{5} < 1$

$\forall 2^{x_1} < 2^{x_2} \iff x_1 < x_2$ διότι $2 > 1$

$(0,97)^{x_1} < (0,97)^{x_2} \iff x_1 > x_2$ διότι $0,97 < 1$

064.2 / $\Sigma \varepsilon \approx 170$ /

$$A \supset \supset \alpha \int u$$

$$i \geq 2$$

" "

145

$$V \leq$$

$$(i) \quad 2^x < 64 \iff$$

$$2^x < 2^6 \quad \left(\begin{array}{c} \uparrow \\ 2^x \end{array} \right)$$

$$X < G$$

$$|(\ddot{u})| \left(\frac{1}{2}\right)^x < \frac{1}{8} \iff \left(\frac{1}{2}\right)^x < \frac{1}{8}$$

$$\left(\frac{1}{2}\right)^x < \left(\frac{1}{2}\right) \quad (=)$$

$$x > 3$$

$$(v \ddot{u}) \quad 32^x < 16^{1-x} \iff$$

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

$$2^{5x} < 2^{4-4x} \quad \begin{matrix} x \uparrow \\ 2 \end{matrix} \quad (\Rightarrow)$$

$$5x < 4 - 4x \quad (=)$$

$$5x + 4x < 4 \quad (-)$$

$$9x < 4 \quad (\Rightarrow) \quad x < 4/9$$

$$(v \ddot{u}_i) \int_{-2}^2 x^2 - x - 2 < 1 \quad (=)$$

$$3^{x^2-x-2} < 3^0 \quad \begin{matrix} \uparrow \\ 3^x \\ \downarrow \end{matrix}$$

$$x^2 - x - 2 < 0$$

$$\begin{array}{ccccc} & & - & 1 & ? \\ \hline + & 0 & - & 0 & + \end{array}$$

$$x \in (-1, 2)$$

AGK. 2

Σελ. 170

43

$$'' < ''$$
 $a \cdot i$

pe

$$11 =$$

2614.3 in

 $\succ \succ$

264

77