

# EXPONENCIALES

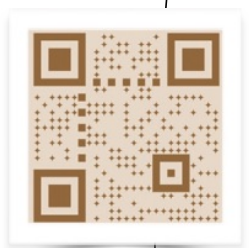
$$(2) \quad 2^{x+1} + 2^x + 2^{x-1} = 14$$

$$(1) \quad 5^{x-1} = 25$$

$$5^{x-1} = 5^2$$

$$x-1 = 2$$

$$x = 3$$



$$2^x \cdot 2^1 + 2^x + \frac{2^x}{2^1} = 2 \cdot 7$$

El 7 nos obliga a hacer un cambio de variable  
 $z = 2^x$

$$z \cdot 2 + z + \frac{z}{2} = 14$$

$$2z + z + \frac{z}{2} = 14$$

$$2 \cdot \left(3z + \frac{z}{2}\right) = (14) \cdot 2$$

$$6z + z = 28$$

$$7z = 28$$

$$z = \frac{28}{7}$$

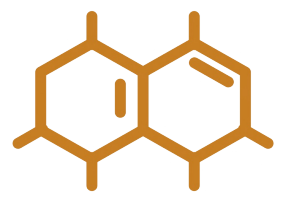
$$\underline{\underline{z = 4}}$$

deshacemos el cambio  
↓

$$\left. \begin{array}{l} z = x^2 \\ z = 4 \end{array} \right\} \sqrt{x^2} = \sqrt{4}$$

$$x = \pm \sqrt{4}$$

$$\underline{\underline{x = \pm 2}}$$



**ACADEMIA  
TEMAS**

3

$$9^x - 6 \cdot 3^{x+1} + 81 = 0$$

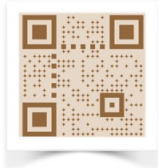
⊗ TRUco

$$(3^2)^x = (3^x)^2$$

$(3^2)^x$   
↓  
0

$$- 2 \cdot 3 \cdot 3^x \cdot 3^1 + 3^2 = 0$$

Este 2, nos obliga  
a hacer un  
cambio de variable



$$z^2 - 6 \cdot z \cdot 3 + 81 = 0$$

$$z = 3^x$$

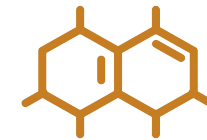
$$z^2 - 18z + 81 = 0 \left\{ \begin{array}{l} z = \frac{18+0}{2} = 9 \\ z = \frac{18-0}{2} = 9 \end{array} \right.$$

solución  
doble.



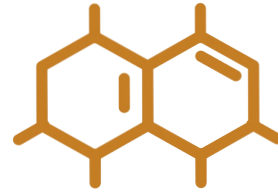
Des hacemos el cambio

$$\left. \begin{array}{l} z = 3^x \\ z = 9 \end{array} \right\} 3^x = 9 ; 3^x = 3^2 ; \underline{x = 2}$$



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$$\textcircled{4} \quad 4 \cdot 2^x = 4^{2x^2+1}$$



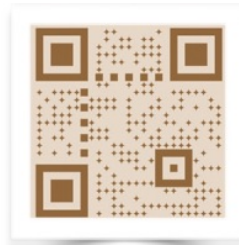
**ACADEMIA  
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$$2^2 \cdot 2^x = (2^2)^{2x^2+1}$$

$$2^{2+x} = 2^{4x^2+2}$$

$$2+x = 4x^2+2$$

$$4x^2 - x = 0$$

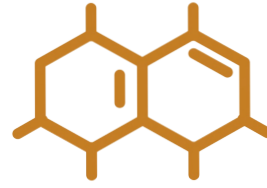


$\textcircled{\text{f.e.}}$

$$x \cdot (4x - 1) = 0 \quad \left\{ \begin{array}{l} x = 0 \\ 4x - 1 = 0 \\ x = \frac{1}{4} \end{array} \right.$$

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



ACADEMIA  
TEMAS

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



$$2^{2-x} = 2^{2x^2+1}$$

$$2-x = 2x^2+1 \quad \longleftarrow 0$$

$$2x^2 + x - 1 = 0 \quad \left\{ \begin{array}{l} x = -1 \\ x = \frac{1}{2} \end{array} \right.$$

