

TEMA 6: ECUACIONES: Ecuaciones Binarias

EJERCICIO 1:

a) $x^4 - 5x^2 - 36 = 0$

$y^2 - 5y - 36 = 0$

$$y = \frac{5 \pm \sqrt{5^2 - 4 \cdot 1 \cdot (-36)}}{2 \cdot 1} = \frac{5 \pm 13}{2} \Rightarrow \begin{cases} y_1 = \frac{5+13}{2} = 9 \Rightarrow y_1 = 9 \Rightarrow \boxed{x = \pm 3} \\ y_2 = \frac{5-13}{2} = -4 \Rightarrow y_2 = -4 \end{cases}$$

b) $x^4 - 4x^2 + 3 = 0$

$y^2 - 4y + 3 = 0$

$$y = \frac{4 \pm \sqrt{4^2 - 4 \cdot 1 \cdot 3}}{2 \cdot 1} = \frac{4 \pm 2}{2} \Rightarrow \begin{cases} y_1 = \frac{4+2}{2} = 3 \Rightarrow y_1 = 9 \Rightarrow \boxed{x = \pm \sqrt{3}} \\ y_2 = \frac{4-2}{2} = 1 \Rightarrow y_2 = 1 \Rightarrow \boxed{x = \pm 1} \end{cases}$$

c) $x^4 - 5x^2 + 4 = 0$

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

$$y = \frac{5 \pm \sqrt{5^2 - 4 \cdot 1 \cdot 4}}{2 \cdot 1} = \frac{5 \pm 3}{2} \Rightarrow \begin{cases} y_1 = \frac{5+3}{2} = 4 \Rightarrow y_1 = 4 \Rightarrow \boxed{x = \pm 2} \\ y_2 = \frac{5-3}{2} = 1 \Rightarrow y_2 = 1 \Rightarrow \boxed{x = \pm 1} \end{cases}$$

d) $x^4 + 16 = 0$

$x^4 = -16 \Rightarrow \boxed{\text{No tiene solución real}}$

e) $x^4 - 12x^2 - 64 = 0$

$y^2 - 12y - 64 = 0$

$$y = \frac{12 \pm \sqrt{12^2 - 4 \cdot 1 \cdot (-64)}}{2 \cdot 1} = \frac{12 \pm 20}{2} \Rightarrow \begin{cases} y_1 = \frac{12+20}{2} = 16 \Rightarrow y_1 = 16 \Rightarrow \boxed{x = \pm 4} \\ y_2 = \frac{12-20}{2} = -4 \Rightarrow y_2 = -4 \end{cases}$$