

TRABAJO PRÁCTICO 1

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L) Hallar conjunto solución de las siguientes cúbicas incompletas

Ejercicio 99

$$\begin{aligned}3x^3 - 7x^2 + 10x &= 0 \\ x(3x^2 - 7x + 10) &= 0\end{aligned}$$

$$x_1 = 0$$

Quedando :

$$\begin{aligned}3x^2 - 7x + 10 &= 0 \\ x^2 - \frac{7}{3}x + \frac{10}{3} &= 0\end{aligned}$$

$$\begin{aligned}\left(\frac{7}{6}\right)^2 - U^2 &= \frac{10}{3} \\ \frac{49}{36} - U^2 &= \frac{10}{3} \\ U^2 &= \frac{49}{36} - \frac{10}{3} = \frac{49 - 120}{36} = -\frac{71}{36} \\ U &= \pm \sqrt{-\frac{71}{36}} = \pm \frac{\sqrt{-71}}{6} = \pm \frac{\sqrt{71}i}{6}\end{aligned}$$

$$\begin{aligned}x_2 &= \frac{7}{6} + \frac{\sqrt{71}i}{6} = \frac{7 + \sqrt{71}i}{6} \\ x_3 &= \frac{7}{6} - \frac{\sqrt{71}i}{6} = \frac{7 - \sqrt{71}i}{6}\end{aligned}$$

$$S = \left\{ 0; \frac{7 + \sqrt{71}i}{6}; \frac{7 - \sqrt{71}i}{6} \right\}$$

Ejercicio 100

$$\begin{aligned} x^3 + 8x^2 + 7x &= 0 \\ x(x^2 + 8x + 7) &= 0 \end{aligned}$$

Por Hankeliana :

$$x_1 = 0$$

Quedando por resolver :

$$x^2 + 8x + 7 = 0$$

Por Po – Shen Loh :

$$(-4)^2 - U^2 = 7$$

$$16 - U^2 = 7$$

$$U^2 = 16 - 7 = 9$$

$$U = \pm\sqrt{9} = \pm 3$$

$$x_2 = -4 + 3 = -1$$

$$x_3 = -4 - 3 = -7$$

Conjunto solución :

$$S = \{ 0; -1; -7 \}$$

Ejercicio 101

$$\begin{aligned} x^3 + 4x^2 + 4x &= 0 \\ x(x^2 + 4x + 4) &= 0 \end{aligned}$$

Por Hankeliana :

$$x_1 = 0$$

Quedando por resolver el otro término :

$$x^2 + 4x + 4 = 0$$

Por Po – Shen Loh :

$$(-2)^2 - U^2 = 4$$

$$4 - U^2 = 4$$

$$U^2 = 4 - 4 = 0$$

$$U = 0$$

$$x_2 = -2$$

Conjunto solución :

$$S = \{ 0 ; -2 \}$$