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lunes, 15 de febrero de 2021 21:08

Resuelva la ec.

$$e^{iz} = \cos(z) + 2$$

$$\cancel{\cos(z)} + i\,\mathrm{sen}(z) = \cancel{\cos(z)} + 2$$

$$i\,\mathrm{sen}(z) = 2$$

$$\cancel{i}\left[\frac{e^{iz} - e^{-iz}}{2\cancel{i}}\right] = 2$$

$$e^{iz} - e^{-iz} = 4 \quad // \, e^{iz}$$

$$(e^{iz})^2 - 1 = 4e^{iz}$$

$$(e^{iz})^2 - 4e^{iz} - 1 = 0$$

$$u = e^{iz}$$

$$u^2 - 4u - 1 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$u = \frac{4 \pm \sqrt{16 - 4(1)(-1)}}{2(1)}$$

$$u = \frac{4 \pm \sqrt{20}}{2}$$

$$u = \frac{4 \pm \sqrt{5 \cdot 4}}{2}$$

$$u = \frac{4 \pm 2\sqrt{5}}{2}$$

$$u_1 = 2 + \sqrt{5}$$

$$u_2 = 2 - \sqrt{5}$$

Caso 1.

$$e^{iz} = 2 - \sqrt{5} \quad // \ln$$

$$iz = \ln(2 - \sqrt{5})$$

$$z = \frac{\ln(2 - \sqrt{5})}{i}$$

Caso 2

$$e^{iz} = 2 + \sqrt{5}$$

$$z = \frac{\ln(2 + \sqrt{5})}{i}$$