$$|w+2i| = |w|$$

$$\operatorname{Arg}(\bar{w}+2) = -\frac{\pi}{4} \to -\frac{\pi}{4} \cdot \frac{180}{\pi}$$

$$= -45 + 360$$

$$335$$

$$270 < 335 < 360$$

IV

$$a > 0 \quad b < 0$$

$$\overline{a+bi}+2 = -\frac{\pi}{4}$$

$$a-bi+2 = -\frac{\pi}{4}$$

$$(a+2)+(-b)i = -\frac{\pi}{4}$$

$$\frac{-b}{a+2} = \tan\left(\frac{-\pi}{4}\right)$$

$$\frac{-b}{a+2} = -1$$

$$-b = -a-2$$

$$\boxed{a = b-2}$$

$$|w+2i| = |w|$$

$$|a+bi+2i| = |a+bi|$$

$$\sqrt{a^2+(b+2)^2} = \sqrt{a^2+b^2}$$

$$\cancel{a^2}+(b+2)^2 = \cancel{a^2}+b^2$$

$$\cancel{b^2}+4b+4 = \cancel{b^2}$$

$$4b = -4$$

$$\boxed{b = -1}$$

$$a = b-2$$

$$a = -1-2$$

$$a = -3$$

$$\nexists$$

8. Encuentre el o los números $w \in \mathbb{C}$ que satisfacen simultáneamente las siguientes condiciones:

R/ $w = 2 + (1 - \sqrt{21})i$

$$\begin{cases} |w + 1 - i| = 5 \\ \arg(w - 2) = \frac{-\pi}{2} \end{cases}$$

Casos especiales

$\theta = \frac{\pi}{2}$ $a = 0$ $b > 0$

$\theta = \frac{-\pi}{2}$ $a = 0$ $b < 0$

$\theta = \pm\pi$ $a < 0$ $b = 0$

$\frac{-\pi}{2} \cdot \frac{180}{\pi}$

$-90 + 360$

270

$a + bi - 2 = \frac{-\pi}{2}$

$(a-2) + bi = \frac{-\pi}{2}$

$a - 2 = 0$ $b < 0$

$a = 2$

$|w + 1 - i| = 5$

$|a + bi + 1 - i| = 5$

$|(a+1) + (b-1)i| = 5$

$(a+1)^2 + (b-1)^2 = 25$

$(2+1)^2 + b^2 - 2b + 1 = 25$

$9 + b^2 - 2b + 1 = 25$

$b^2 - 2b + 10 - 25 = 0$

$b^2 - 2b - 15 = 0$

$b = 5$ $b = -3$

$\boxed{2 - 3i}$