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$$a) z_1 = \frac{8+6i}{-1+3i} \quad z \bar{z} = |z|^2$$

$$|-1+3i| = \sqrt{10}$$

$$(-1+3i) \cdot (-1-3i) = |-1+3i|^2 = \sqrt{10}^2 = 10$$

$$(8+6i) \cdot (-1-3i) = -8-24i-6i-18i^2 = 10-30i$$

$$z_1 = \frac{(8+6i)(-1-3i)}{(-1+3i)(-1-3i)} = \frac{10-30i}{10} = 1-3i$$

$$b) z_2 = \frac{8+6i}{1-3i} \quad (1-3i)^2 = -3i+1-3i-9 = -4-6i$$

$$|1-3i| = \sqrt{10}$$

$$(8+6i)(1+3i) = 8+24i+6i-18i^2 = 10+30i$$

$$z_2 = \frac{(8+6i)(1+3i)}{(1-3i)(1+3i)} = \frac{10+30i}{10} = 1+3i$$

$$c) p(z) = z^2 + z(-2+3i) + 1-3i \quad \Rightarrow p(1-3i) = 0 \quad \checkmark$$

$1-3i$ es raíz de p

$$(1-3i)^2 + (1-3i)(-2+3i) + 1-3i = -8-6i + (-2+3i+6i+9) + 1-3i = -7-9i + (7+9i) = 0 \quad \checkmark$$

$$3. z = \sqrt{2} \left(\frac{3}{2} - \frac{3}{2}i \right)$$

$$|z| = \sqrt{\frac{9 \cdot 2}{4} + \frac{9 \cdot 2}{4}} = \sqrt{\frac{18}{4} + \frac{18}{4}} = \sqrt{\frac{36}{4}} = \frac{6}{2} = 3$$

$$z = 3(\cos \alpha + i \sin \alpha)$$

$$3 \cos \alpha = \frac{3\sqrt{2}}{2}$$

$$3 \sin \alpha = -\frac{3\sqrt{2}}{2}$$

$$\cos \alpha = \frac{\sqrt{2}}{2} \rightarrow \alpha = -\pi/4$$

Quarto cuadrante