[I] (40pts) (1) Solve

\[ z^2 - \sqrt{-3} z + 6 = 0, \]

within the complex number system \( \mathbb{C} \).

[Answer]:

\[ z = \]

\[ \quad \]

\( \cdot \)
(2) Solve

$$z^2 + 2\sqrt{-2}z + 1 = 0,$$

within the complex number system $\mathbb{C}$.

[Answer]:

$$z = \frac{-\sqrt{-2} \pm \sqrt{(-\sqrt{-2})^2 - 4 \cdot 1 \cdot 1}}{2}.$$

$\cdots$
(3) Solve

\[ z^2 + 6 \sqrt{-10} \, z - 90 = 0, \]

within the complex number system \( \mathbb{C} \).

[Answer]:

\[ z = \]

\[ \text{[value]} \].
(I) continued

(4) Solve

\[ z^2 + \left( 4 - \sqrt{-2} \right) z + 7 + \sqrt{-2} = 0, \]

within the complex number system \( \mathbb{C} \).

\[ \text{Answer} \]

\[ z = \]

\[ \phantom{z} \]
(5) Solve

\[ z^2 + \left( \sqrt{5} + \sqrt{-3} - \sqrt{-5} \right) z + \sqrt{15} - \sqrt{-1} \cdot 5 = 0, \]

within the complex number system \( \mathbb{C} \).

[Answer]:

\[ z = \]

\[ \text{ } \]
(6) Solve

\[ z^2 - 3z + 2 - \sqrt{-1} = 0, \]

within the complex number system \( \mathbb{C} \).

[Answer]:

\[ z = \]

\[ \text{.} \]
(7) Let

\[ \alpha = \frac{1 + \sqrt{-3}}{2}. \]

Solve

\[ z^2 - \alpha z + \alpha^2 = 0, \]

within the complex number system \( \mathbb{C} \).

Answer:

\[ z = \]

\[ \phantom{z} \]
(8) Solve

\[ z^2 + \left( 1 + e^{\sqrt{-1} \frac{6\pi}{7}} \right) z - \frac{-1 + \sqrt{-7}}{2} = 0, \]

within the complex number system \( \mathbb{C} \).

[Answer]:

\[ z = \]

\[ \quad \]