Risolvere in $\mathbb{C}$ le seguenti equazioni.

1. $z|z|^2 - (1 + 4\sqrt{3})i\bar{z} = 0$ $\qquad\qquad\qquad \left[0, \pm\sqrt{1 + 4\sqrt{3}}\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i\right)\right]$

2. $z^3\bar{z} + 3i|z|^2 = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad \left[0, \pm\frac{\sqrt{3}}{\sqrt{2}}(-1 + i)\right]$

3. $|z^2 - 1| = |z + z^2|$ $\qquad\qquad\qquad\qquad\qquad\qquad [-1, \frac{1}{2} + iy, y \in \mathbb{R}]$

4. $|z|^2 = -iz^2$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad [x + ix, x \in \mathbb{R}]$

5. $z|z| = 5z - 6$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad [2, 3, -6]$

6. $|z|^2 + z = 4 - 2i$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad [-2i, -1 - 2i]$

7. $(z + i)^3 = \frac{1 - i}{1 + i}$ $\qquad\qquad\qquad\qquad\qquad\qquad \left[0, \pm\frac{\sqrt{3}}{2} - \frac{3}{2}i\right]$

8. $z^2 - 2z + 2 = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad [1 \pm i]$

9. $z^2 + 3iz + 1 = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad \left[\frac{-3 \pm \sqrt{13}}{2}i\right]$

10. $z|z| - 2z + i = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad [i, (-1 - \sqrt{2})i]$

11. $z^2|z|^2 = i$ $\qquad\qquad\qquad\qquad\qquad\qquad \left[\pm\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i\right)\right]$

12. $z^2 + i\bar{z} = 1$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad \left[\pm\frac{\sqrt{7}}{2} - \frac{1}{2}i\right]$

13. $z^2 - (4 + i)z + 4 + 2i = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad [2, 2 + i]$

14. $z^6 + 2z^3 - 3 = 0$ $\qquad\qquad \left[1, -\frac{1}{2} \pm \frac{\sqrt{3}}{2}i, \sqrt[3]{3}\left(\frac{1}{2} \pm \frac{\sqrt{3}}{2}i\right), -\sqrt[3]{3}\right]$

15. $z^3 = 3 - 3i$ $\qquad\qquad \left[\sqrt[6]{18}e^{i\frac{7}{12}\pi}, \sqrt[6]{18}e^{i\frac{15}{12}\pi}, \sqrt[6]{18}e^{i\frac{23}{12}\pi}\right]$

16. $(z^2 - 4)(\bar{z}^2 + i) = 0$ $\qquad\qquad\qquad\qquad\qquad \left[\pm 2, \pm\frac{\sqrt{2}}{2}(1 + i)\right]$

17. $iz^2 - |z|^2 = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad [x - xi, x \in \mathbb{R}]$

18. $z^3 - i(z - 2)^3 = 0$ $\qquad\qquad\qquad\qquad\qquad [1 + i, 1 - (2 \pm \sqrt{3})i]$

19. $z^4 - z\bar{z} - 2 = 0$ $\qquad\qquad\qquad\qquad\qquad\qquad [\pm\sqrt{2}, \pm\sqrt{2}i]$

20. $z^4 + (1 - i)z^2 - i = 0$ $\qquad\qquad\qquad\qquad\qquad [\pm i, \pm\frac{\sqrt{2}}{2}(1 + i)]$

21. $(z + 2)^4 = (z - 1)^4$ $\qquad\qquad\qquad\qquad\qquad\qquad [-\frac{1}{2}, \frac{-1 \pm 3i}{2}]$