

Answers to Chapter 10 Review

1. $5, 3i, -3i$
2. $p(x) = (x - i)(x - 1 - 4i)(x - 1 + \sqrt{2})$
3. $p(x) = (x - 1 + i)(x - 1 - i)(x - 2 - \sqrt{5})(x - 2 + \sqrt{5})$
4. -2 (multiplicity 2), $5i, -5i$
5. $p(x) = (x - 4 + \sqrt{3})(x - 9 + 2i)$
6. $p(x) = (x - 5 + 12i)(x - 5 - 12i)(x - 3 - \sqrt{2})(x - 3 + \sqrt{2})$
7. $(x - 1)(x - 2 - i)(x - 2 + i) = 0$
8. $-1, 2, -1 + 2i, -1 - 2i$
9. $p(x) = (x - 3 + \sqrt{5})(x - 8 - 3i)$
10. $p(x) = (x - 3 + 5i)(x - 3 - 5i)(x - 8 - \sqrt{5})(x - 8 + \sqrt{5})$
11. a) $2, 3$ b) $i, -i$
12. a) $5 \rightarrow$ degree = 5 b) 1 more $\rightarrow i$ c) coefficients real then complex solutions must be conjugates
13. $(z + 1)(z - 3 - 2i)(z - 3 + 2i) = 0$
14. $-2, 1, 2 + 3i, 2 - 3i$
15. $i, -i$
16. $p(x) = x^5 - x^4 - 9x^3 - 11x^2 - 4x$
17. $2, 3, 2i, -2i$
18. $3, 2 + i, 2 - i$
19. $\pm 1, \pm 2, \pm 3, \pm 5, \pm 6, \pm 10, \pm 15, \pm 30$
20. $p(x) = x^3 - (i + 1)x^2 + ix$
21. $2x^3 + x^2 - 3x + 10 + \frac{-42}{x + 3}$
22. $69, 41, -7$
23. 3 (multiplicity 2), 4 (multiplicity 2)
24. $1, -4, 0$ (multiplicity 3)
25. 3 (multiplicity 2), -4 (multiplicity 3), 0 (multiplicity 4)