

3.6 Practice A

In Exercises 1–4, identify the number of solutions of the polynomial equation. Then find all solutions of the equation.

1. $x^3 - 125 = 0$

2. $27g^5 + g^2 = 0$

3. $t^5 - t^3 + t^2 - 1 = 0$

4. $x^3 - 2x^2 + 5x - 10 = 0$

In Exercises 5–8, find all zeros of the polynomial function.

5. $f(x) = x^4 - 5x^2 - 36$

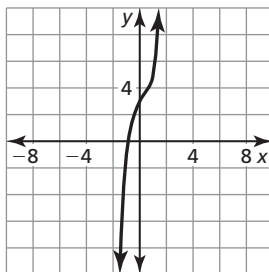
6. $f(x) = x^4 + x^3 - 7x^2 - x + 6$

7. $g(x) = x^4 - x^3 + 9x^2 - 9x$

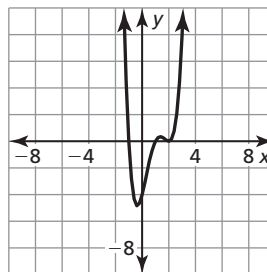
8. $h(x) = x^4 - 11x^2 + 18$

In Exercises 9 and 10, determine the number of imaginary zeros for the function with the given degree and graph. Explain your reasoning.

9. Degree: 5



10. Degree: 4



In Exercises 11–13, write a polynomial function f of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros.

11. $-4, 1, 2$

12. $2, 3, -1$

13. $2, \sqrt{3}$

14. Write a polynomial function of degree 5 with zeros $-1, 2,$ and i . Justify your answer.

In Exercises 15–17, determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros for the function.

15. $g(x) = x^3 - 2x^2 - 3x + 1$

16. $g(x) = x^4 + x^2 - 10$

17. $g(x) = x^5 - 2x^4 + x^2 - 3x - 2$