

3.6 Practice B

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

1. $8x^3 + 27 = 0$

2. $4p^5 - 32p^2 = 0$

3. $t^8 - t^4 - t^2 + 1 = 0$

4. $x^5 - 9x^3 + 8x^2 - 72 = 0$

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

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

6. $f(x) = x^4 - 12x^3 + 54x^2 - 108x + 81$

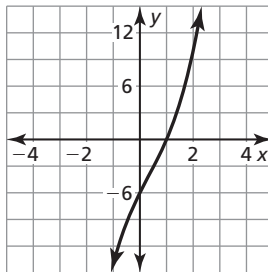
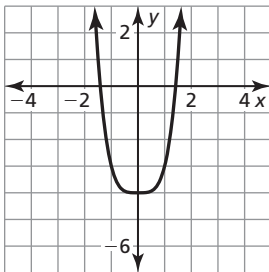
7. $g(x) = x^5 + 4x^4 + x^3 - 14x^2 - 20x - 8$

8. $f(x) = x^5 + 2x^4 - 13x^3 - 26x^2 + 36x + 72$

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: 4

10. Degree: 3



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. $2, 3 + i$

12. $2i, 1 - i$

13. $3, -\sqrt{7}$

14. Two zeros of $f(x) = x^3 - 2x^2 + 9x - 18$ are $3i$ and $-3i$. Explain why the third zero must be a real number.

15. Use Descartes' Rule of Signs to determine which function has no positive real zeros.

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

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

C. $f(x) = x^4 + x^2 + 10$

D. $f(x) = x^4 + 5x^3 - 9x - 7$