

Chapter 5

5.1 Write the answer in scientific notation.

1. $(3.4 \times 10^3)(2.8 \times 10^8)$

2. $(5.8 \times 10^{-6})^4$

3. $\frac{4.6 \times 10^{-7}}{9.2 \times 10^{-9}}$

5.1 Simplify the expression. Tell which properties of exponents you used.

4. $\frac{-14x^{-3}y^5}{35xy^3}$

5. $(4a^5b^{-2})^{-3}$

6. $(2r^3s^3)(r^{-7}s^5)$

7. $\frac{xy^{-1}}{x^2y} \cdot \frac{7x^3}{y^{-4}}$

5.2 Graph the polynomial function.

8. $f(x) = x^4$

9. $f(x) = x^3 + x + 4$

10. $f(x) = -x^3 + 3x$

11. $f(x) = x^5 + 2x^3$

5.3 Perform the indicated operation.

12. $(4z^3 + 9) + (3z^2 - 4z - 2)$

13. $(x^2 + 3x - 1) - (4x^2 + 7)$

14. $(3x - 4)^3$

5.4 Factor the polynomial completely using any method.

15. $3x^4 + 18x^3 + 27x^2$

16. $343x^3 + 1000$

17. $2x^3 + x^2 - 8x - 4$

5.4 Find the real-number solutions of the equation.

18. $3x^3 + 18x^2 = 48x$

19. $x^4 + 32 = 14x^2$

20. $2x^3 + 48 = 3x^2 + 32x$

5.5 Divide using polynomial long division or synthetic division.

21. $(2x^3 + 4x^2 - 5x + 16) \div (x - 3)$

22. $(x^4 + 2x^3 - 7x^2 - 14) \div (x + 2)$

5.6 Find all real zeros of the function.

23. $f(x) = 2x^3 + 3x^2 - 8x + 3$

24. $f(x) = 2x^4 + x^3 - 53x^2 - 14x + 20$

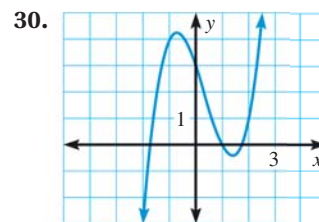
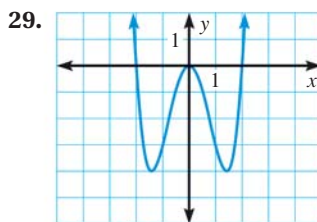
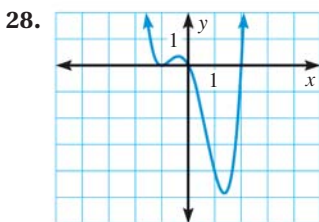
5.7 Determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros of the function.

25. $f(x) = -x^3 + 2x^2 - 11x - 1$

26. $f(x) = 4x^5 + 3x^2 - 8x - 10$

27. $f(x) = x^4 - 3x^3 - 7x - 13$

5.8 Estimate the coordinates of each turning point and state whether each corresponds to a local maximum or a local minimum. Then estimate all real zeros and determine the least degree the function can have.



5.9 Use finite differences and a system of equations to find a polynomial function that fits the data in the table.

31.

x	1	2	3	4	5	6
y	2.5	11	27.5	55	96.5	155

32.

x	1	2	3	4	5	6
y	-7	-6	39	188	525	1158