

1-6 ■ Graph the polynomial. Show clearly all x - and y -intercepts.

1. $P(x) = (x - 2)^3 + 8$

2. $P(x) = 32 - 2x^4$

3. $P(x) = x^3 - 9x$

4. $P(x) = x^3 - 5x^2 - 6x$

5. $P(x) = x^3 - 5x^2 - 4x + 20$

6. $P(x) = x^4 - 9x^2$

11-18 ■ Find the quotient and remainder.

11. $\frac{x^3 - x^2 + x - 11}{x - 3}$

12. $\frac{x^4 + 30x + 12}{x + 3}$

13. $\frac{x^3 - x^2 - 11x + 6}{x^2 + 2x - 5}$

14. $\frac{x^5 - 3x^4 + 3x^3 + 20x - 6}{x^2 + 2x - 6}$

15. $\frac{x^4 - 25x^2 + 4x + 15}{x + 5}$

16. $\frac{2x^3 - x^2 - 5}{x - \frac{3}{2}}$

17. $\frac{x^4 + x^3 - 2x^2 - 3x - 1}{x - 2}$

27. Find a polynomial of degree 3 with constant coefficient 12 and zeros $-\frac{1}{2}$, 2, and 3.

45-50 ■ Graph the rational function. Show clearly all x - and y -intercepts and asymptotes.

45. $r(x) = \frac{3x - 12}{x + 1}$

46. $r(x) = \frac{1}{(x + 2)^2}$

47. $r(x) = \frac{x - 2}{x^2 - 2x - 8}$

48. $r(x) = \frac{2x^2 - 6x - 7}{x - 4}$

49. $r(x) = \frac{x^2 - 9}{2x^2 + 1}$

50. $r(x) = \frac{x^3 + 27}{x + 4}$

55. Find the coordinates of all points of intersection of the graphs of

$y = x^4 + x^2 + 24x$ and $y = 6x^3 + 20$