

3.2 WS 2

Examine the leading term to determine the far-left and far-right behavior of the graph of each polynomial function.

1. $P(x) = -450 + x^6$

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

3. $P(x) = -x^5 + 4x^2 + 9$

4. $P(x) = \frac{3}{4}x^4 - 5x^3 + 6x^2 - 3x - 7$

Find all relative and absolute extreme values.

5. $P(x) = x^3 - 3x^2 - 24x + 3$

6. $P(x) = -3x^2 + 12x - 2x^3 + 1$

7. $P(x) = x^4 - 10x^2 + 9$

Find all the real zeros of each polynomial by factoring.

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

9. $P(x) = 4x^4 - 37x^2 + 9$

Use long division to divide the polynomials.

10. $\frac{x^3 - 8x - 3}{x - 3}$

11. $\frac{-8x^2 + 2x + 4x^3 - 1}{2x + 1}$

Use synthetic division to divide the polynomial.

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

13. $\frac{8x^3 - 4x^2 + 3x}{x + 5}$

Use synthetic division to determine whether the binomial is a factor of $P(x)$.

14. $P(x) = 9x^4 - 6x^3 - 23x^2 - 4x + 4$, $x + 1$

15. $P(x) = 16x^4 + 9x^2 + 14x - 8x^3 + 4$, $x - \frac{1}{4}$