

## 3.2 WS

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

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

2.  $P(x) = -2x^3 - 6x^2 + 5x - 1$

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

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

**Find all relative and absolute extreme values.**

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

6.  $P(x) = x^3 + 4x^2 - 4x - 16$

7.  $P(x) = x^4 - 4x^3 - 2x^2 + 12x - 5$

**Find all the real zeros of each polynomial by factoring.**

8.  $P(x) = x^3 - 2x^2 - 15x$

9.  $P(x) = x^4 - 13x^2 + 36$

**Use long division to divide the polynomials.**

$$10. \frac{2x^3 - 3x^2 + 4x + 5}{x + 2}$$

$$11. \frac{11x^2 - 31x + 6x^3 + 15}{3x + 2}$$

**Use synthetic division to divide the polynomial.**

$$12. \frac{4x^3 + 10x^2 - 6x - 20}{x + 2}$$

$$13. \frac{10x^3 - 9x^4 + 7x^2 - 6}{x - 1}$$

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

$$14. P(x) = 4x^3 - 3x^2 - 8x + 4, x - 2$$

$$15. P(x) = 3x^4 - 3x + x^3 + 1, x + \frac{1}{3}$$