

1. Complete the end behavior statements for the polynomial: $f(x) = -x^5 + 4x^3 + 5x + 2$

$$f(x) \rightarrow \quad \text{as } x \rightarrow +\infty; f(x) \rightarrow \quad \text{as } x \rightarrow -\infty$$

2. True or False: The graph of a polynomial function will cross the x axis at the imaginary roots.

3. Write a polynomial function, in factored form, for a polynomial with zeros: $-3, \frac{1}{2}, 5$

4. Find all the zeros of the polynomial: $f(x) = x^4 + 2x^3 - 13x^2 - 14x + 24$

5. Given the factored form of the polynomial, identify zeros, including multiplicity: $P(x) = (x - 5)(x + 1)(x + 3)^2$

6. Given the factored form of the polynomial, identify the zeros, including multiplicity: $P(x) = x(2x - 1)(x - 6)$

7. Given $(x + 3)$ as a factor of the polynomial $f(x) = 5x^3 + 9x^2 - 26x - 24$, find all the **zeros** of the polynomial.

8. Given $(x + 9)$ is a factor of the polynomial $f(x) = 3x^3 + 38x^2 + 109x + 90$, find the **remaining factors**.

9. Given $x = 1$ is a zero of the polynomial, find the remaining **zeros**: $f(x) = x^3 - 2x^2 - 5x + 6$

10. Determine whether $(x - 2)$ is a factor of the given polynomial: $2x^4 + 7x^3 - 4x^2 - 27x - 18$

Circle: $(x - 2)$ IS/ IS NOT a factor of the given polynomial.