

Algebra 2
Review T9: Polynomials

Name: _____

Date: _____

1. Find the sum.

$$(10x^5 - 5x^4 + x + 3) + (-2x^4 - 3x^3 - 4x + 1)$$

2. Find the difference.

$$(3x^5 + 2x^3 - 7x^2 + 5x) - (4x^5 - 2x^3 + 6x^2 - 7)$$

3. Find the product.

$$2x^3(-3x^2 + x - 2)$$

4. Find the product.

$$(4x^2 + x - 5)(2x + 1)$$

5. Find the product.

$$(x - 1)(x + 2)(x - 3)$$

6. Use Long Division to divide $(2x^4 + 5x^3 + x - 1)$ by $(x^2 - 2x + 1)$. Show all the steps.

7. Use Synthetic Division to divide $(3x^4 + x^3 - 2x^2 + 2x - 5)$ by $(x + 1)$. Be sure to write you answer in the correct form!

8. Use Synthetic Division to evaluate $f(x) = 5x^4 + 2x^3 - 20x - 6$, when $x = 2$.

9. Describe the end behavior and how many possible zeros function has.

$$f(x) = x^4 - 18x^2 - 4x + 2$$

End behavior: _____ How many possible zeros: _____

(bonus point for knowing the name/type of function: _____)

10. Describe the end behavior and how many possible zeros function has.

$$f(x) = -2x^5 + 2x^4 + 40x^3$$

End behavior: _____ How many possible zeros: _____

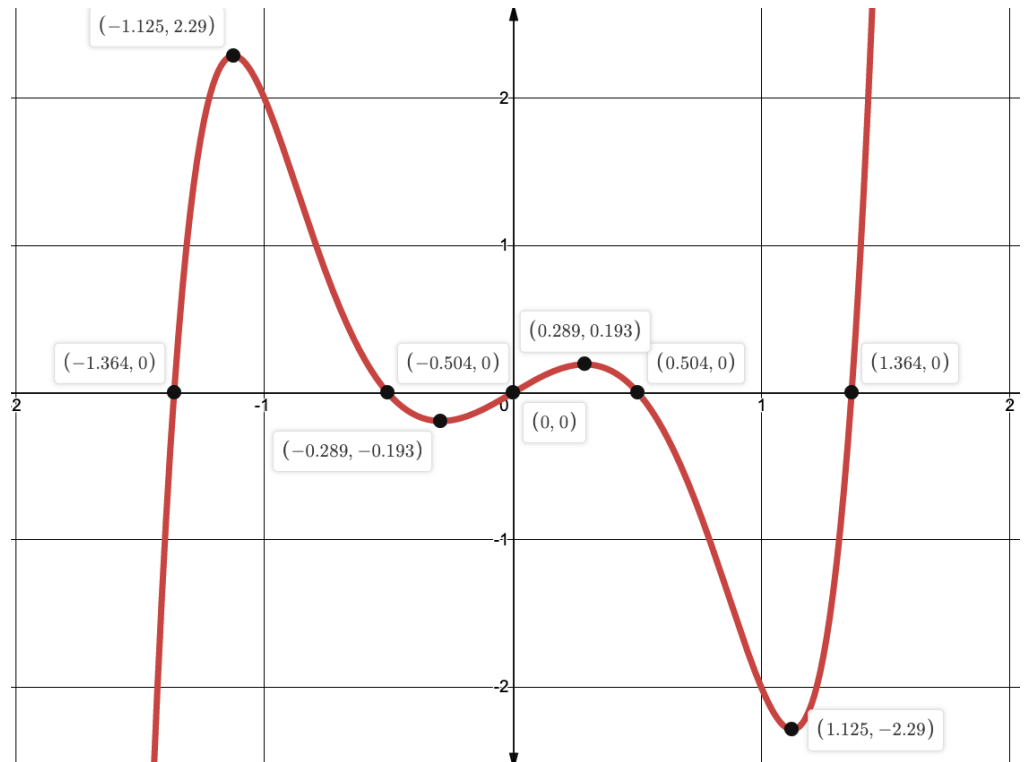
(bonus point for knowing the name/type of function: _____)

11. Use the graph to answer the following questions.

Fill in the table with the following information:

y-intercept
 zeros (x-intercepts)
 relative maximum
 relative minimum

x	f(x)



State the open intervals where the function is

Increasing:

Decreasing:

(Bonus point if you can tell me what degree this function is _____)