Name: _____ Per: _____ Date: _____
Serafino • Algebra II

5–R Polynomials Quest Review

Note: You should be able to do all of these problems WITHOUT a graphing calculator.

1. For the polynomial $f(x) = -3x^5 + 4x^3 - x2 + 9x - 6$, describe a) end behavior, b) the y–intercept, c) the maximum number of intercepts d) the maximum number of turns, and e) a list of all possible rational roots.

2. Factor the polynomial and get all solutions. $x^3 - 4x^2 - 7x + 10$

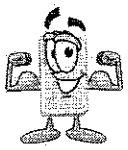
3. $f(x) = 2x^4 - 7x^3 + 2x^2 - 4x + 9$, find f(4).

4. Graph: $x(x + 2)^2(x + 1)(x - 1)$

5. Factor and find all solutions: $x^4 - 4x^2 = 32$

6. Find the missing factors of $f(x) = x^3 - 10x^2 + 13x + 24$. $(x - 8)$ (?) (?)

7. Graph $f(x) = -x^3 + 4x^2 + 12x$



Note: You should be able to do all of these problems correctly with your brain and/or the help of a graphing calculator. I WILL NOT provide a calculator for students who don't have one. I am not showing you how to use a calculator on the test. That's what homework and class time is for. ♥ Thank you, the Management.

8. Write the polynomial function in a) factored and b) standard form if the zeros are 0, 2, 2, and –1.

9. Using a calculator, sketch the polynomial, labeling intercepts and relative minimum and relative maximum value points of the polynomial: $f(x) = -x^2 + 6x^2 + x - 6$

10. Is $(x + 4)$ a factor of $f(x) = x^2 - 2x - 8$ or $g(x) = x^2 + 2x - 8$?

11. Factor and get all solutions: $f(x) = x^4 - 2x^2 - 99$

12. Divide using synthetic division $4x^3 - 2x - 6 \div (x + 2)$

13. List and count the possible rational roots of: $6x^2 + 4x - 2$

14. Factor completely and get all solutions. $8x^3 + 125$

15. What is the only rational solution to $64x^3 + 1$?

16. Factor and find all solutions: $f(x) = x^4 + x^3 - 21x^2 - 9x + 108$.

17. Factor and find all solutions to $f(x) = x^5 + x^4 - 8x^3 + 4x^2 - 48x$.

18. Factor and find all solutions to $f(x) = x^3 + 2x^2 - 7x + 40$

19. The volume, in cubic inches, of a rectangular box is represented by the function $V(x) = x^3 - 3x^2 - x + 3$. The length is the longest, the width is the shortest. Find the linear binomials that represent the length, width and height of the box.