

Chapter Six Review

R – AA – U1C6

Name _____ Period _____

1. List all possible rational zeros of the function
 $f(x) = x^3 - x^2 - 9x + 9$. Do not find the zeros. 1. _____
2. List all possible rational zeros of the function
 $f(x) = 4x^3 + 2x^2 + 16x + 8$. Do not find the zeros. 2. _____
3. Solve the following equation, giving exact
answers: $x^3 - 2x^2 - 9x + 18 = 0$. 3. _____
4. Solve the following equation, giving exact
answers: $x^4 + x^2 = 2$. 4. _____
5. Solve the following equation, giving exact
answers: $x^2 - 12x = -28$. 5. _____

6. Solve the following equation, giving exact answers: $(x - 2)^2 + 64 = 72$.

6. _____

7. Solve the following equation, giving exact answers: $4x^2 = 12x + 40$.

7. _____

8. Solve the following equation, giving exact answers: $x^4 + x^3 + 2x^2 + 4x = 8$.

8. _____

9. Write the following polynomial in standard form. Also classify it by number of terms and degree. Polynomial: $(x^2 + 2x + 3) - (x^2 - 5)$

9. Standard form: _____

Name by degree: _____

Name by number of terms: _____

10. Write the following polynomial in standard form. Also classify it by number of terms and degree. Polynomial: $(6x^3 + 3x^2 - 5x - 1) - (7x^3 - 5x - 6)$

10. Standard form: _____

Name by degree: _____

Name by number of terms: _____

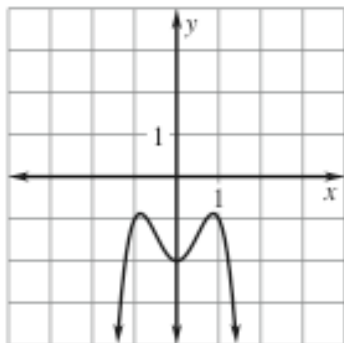
11. Write the following polynomial in standard form. Also classify it by number of terms and degree. Polynomial: $(2x + 3) + (4x^2 - 10)$

11. Standard form: _____

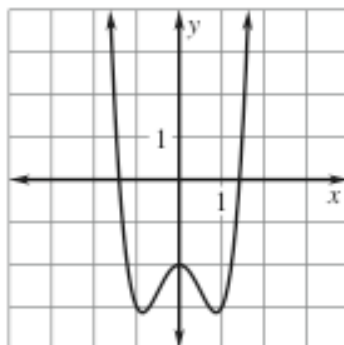
Name by degree: _____

Name by number of terms: _____

12. Use the graph below to approximate any relative minimums and maximums.



13. Use the graph below to approximate any relative minimums and maximums.



14. Divide $(x^4 + 9x^3 - 4x - 17) \div (x + 5)$.

12. Max(s): _____

Min(s): _____

13. Max(s): _____

Min(s): _____

14. _____

15. Divide $(5x^4 + 14x^3 + 9x) \div (x^2 + 3x)$.

15. _____

16. Three of the roots of a polynomial are 5 , $-4i$, and $1 + \sqrt{6}$. What are all of the **roots** of this polynomial? Explain.

16. Roots: _____

Explanation:

17. Two of the roots of a polynomial are $-\sqrt{3}$ and $7i$. What are all of the **factors** of this polynomial? Explain.

17. Factors: _____

Explanation:

18. Write the following function in factored form:
 $f(x) = 2x^5 - 12x^4 + 18x^3$.

18. Factored form: _____

19. Find the zeros and multiplicity of zeros of the function from #18: $f(x) = 2x^5 - 12x^4 + 18x^3$.

19. Zeros: _____

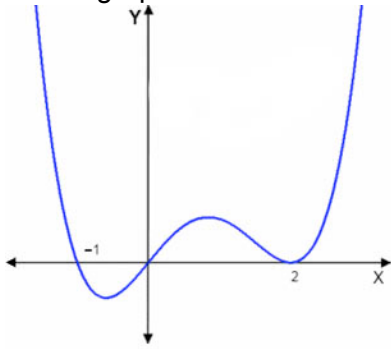
Multiplicities: _____

20. Describe the end behavior of the function $f(x) = 2x^5 - 12x^4 + 18x^3$ by filling in the blanks at right.

20. As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

As $x \rightarrow +\infty$, $f(x) \rightarrow$ _____

21. Write a possible function in factored form for the graph shown below.



21. _____

22. Determine if $(x - 4)$ is a factor of the function $f(x) = x^4 - 3x^2 + 5x - 8$. How does this method shown if this or is not a factor?

22. _____

23. The average amount of tangerines (t in pounds) eaten per person each year in the United States from 2001 to 2006 can be modeled by $t = 0.298y^3 - 1.73y^2 + 2.05y + 4.45$ where y is the number of years since 2001. Using your graphing calculator:

- a. Graph the function and identify the relative minimum and relative maximum where $0 \leq y \leq 4$.

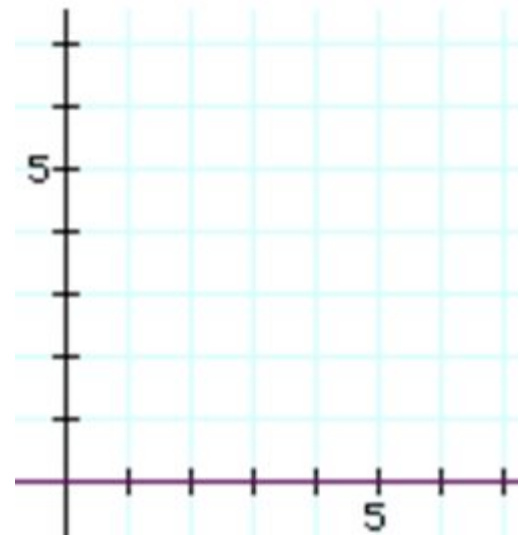
Relative minimum: _____

Relative maximum: _____

- b. What is the real-life meaning of the relative minimum?

- c. What is the real-life meaning of the relative maximum?

a.



24. Use your graphing calculator to approximate the coordinates of the zeros, relative maximums, and relative minimum of the graph of the function listed below. Also identify the end behavior of the graph of the function.

Function: $f(x) = 0.25x^3 + 0.755x^2 - 1.06x - 1.17$

a. Zero(s) of the function: _____

b. Relative minimum: _____ c. Relative maximum: _____

d. End behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

As $x \rightarrow +\infty$, $f(x) \rightarrow$ _____