## Quiz Review CYU 4.1 – 4.9

☑ Use when you get it right all by yourself

S Use when you did it all by yourself, but made a silly mistake

H Use when you could do it alone with a little help from teacher or peer

G Use when you completed the problem in a group

X Use when a question was attempted but wrong (get help)

N Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Degree of a polynomial	1		
End behavior	1, 16	9, 10, 11	17
Number of possible zeros	1, 2	9, 10, 11	
Even or odd function	2	9, 10, 11	17
Domain & Range in interval notation	3		
Graphing polynomial function on the calc.	3, 7	11	
Synthetic Division	4		8, 18
Factors of polynomials	4	5, 14	11, 13, 15
Remainder theorem	6		13, 15
Solving polynomial equations		7	
Sketching polynomial functions w/o the calc.		9, 10	
Multiplicities	9, 10	11	
Synthetic Substitution	12	15	13
x and y intercepts		11, 14	
Leading coefficient		9, 10, 11	17
Rational Root Theorem		18	
Descartes' Rule of Signs			18
Factoring			18
Writing polynomial functions		21, 22	19, 20
Finding the "a" value for a graph		19, 20	
Imaginary & Irrational Conjugates	21, 22		
Regression on the calculator	23		
Finite differences		23	

1. State the degree for the polynomial function, $f(x) = x^5 - 4x^3 + 2x - 3$, describe end behavior in sentence form, and tell how many zeros it **could** have.
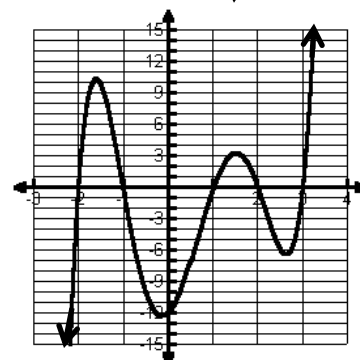
2. Is the graph **to the right** an even- or odd-degreed function? How many real zeros does it have?
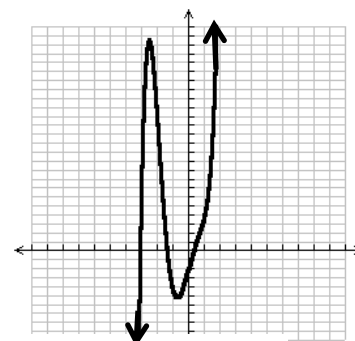
3. Determine the domain and range of $f(x) = x^5 - 6x^2 + x^2 - 3$

4. Divide using synthetic division $(6x^3 + 9x^2 - 6x + 2) \div (x + 2)$
   Is the binomial a factor of the polynomial?

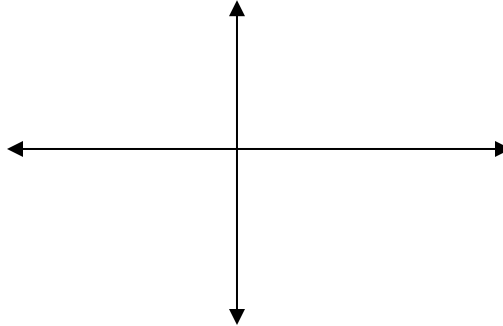5. Using the graph **to the right**, list all the factors.

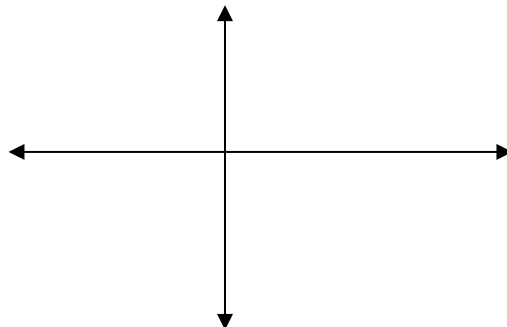6. Find the remainder for $(2x^3 - 3x^2 + 4x - 5) \div (x - 2)$

7. Solve $2x^3 - 5x^2 - 4x + 3 = 0$ over the set of real #'s.

8. Find the value of k so that the remainder for $(x^3 - 2x^2 + x - k) \div (x - 2)$ is 8.
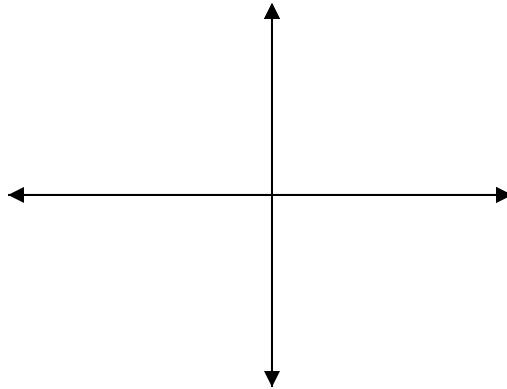
9. Sketch a Graph with zeros at (5, 0), (- 1, 0) and (- 5, 0) with multiplicity of 2, and a lead coefficient that is negative.

10. Sketch a Graph that has solutions x = 0, 5, and -4 with multiplicity of 3 and a positive leading coefficient.

11. Sketch the graph of $f(x) = x^2(x - 3)(x + 1)$ using correct end behavior, x and y intercepts.

12. Use synthetic substitution to find f(2) for $f(x) = 4x^3 - 3x^2 + 7$.

13. Given f(- 2) = 0 for a certain polynomial function, which of the following statements regarding the polynomial is TRUE?

A. x + 2 is a factor   B. x – 2 is a factor   C. 2 is a solution   D. –2 is a solution
E. A and C are true   F. A and D are true   G. B and D are true   H. ALL statements are false.

14. What are the x-intercepts for $(x - 3)(x + 4)(x - 1) = f(x)$?

15. Given that $f(3) = -44$ for $f(x) = x^3 - 8x^2 + 2x - 5$, which statement below is true?

A. $x - 3$ is a factor of $f(x) = x^3 - 8x^2 + 2x - 5$ B. $x + 3$ is a factor of $f(x) = x^3 - 8x^2 + 2x - 5$

C. -44 is a solution   D. 3 is a solution   E. $f(x) = x^3 - 8x^2 + 2x - 5 \div (x - 3)$ has a remainder of -44

F. $f(x) = x^3 - 8x^2 + 2x - 5 \div (x + 3)$ has a remainder of -44

16. Which of the following is true for a function whose degree is even and whose leading coefficient is negative?

    A. As x approaches -∞, f(x) approaches +∞
        As x approaches +∞, f(x) approaches +∞

    C. As x approaches -∞, f(x) approaches -∞,
        As x approaches +∞, f(x) approaches +∞

    B. As x approaches -∞, f(x) approaches -∞,
        As x approaches +∞, f(x) approaches -∞,

    D. As x approaches -∞, f(x) approaches +∞
        As x approaches +∞, f(x) approaches -∞,

17. The following graph illustrates a function whose degree is ___ and whose leading coefficient is _____.
    A. even, negative

    B. even, positive

    C. odd, negative

    D. odd, positive
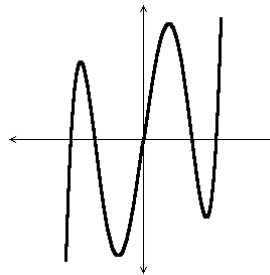
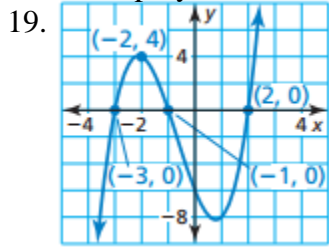18. Given: $f(x) = x^3 + x^2 + x + 1$

A. List all possible rational roots using Rational Root Theorem.

B. Use Descartes rule of signs to determine the number of positive, negative or complex roots.

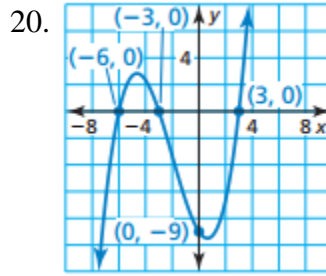C. Find all rational roots by dividing until you factor.

D. List the zeros/solutions/roots.

Write the polynomial function, by finding the "a" value first.

19.

20.

a = _____

Function: _____

a = _____

Function: _____

Given the zeros write the lowest degree polynomial function.

21. x = 1, - 4, $\sqrt{7}$

22. x = - 6, 0, $-2i$

23. Use finite differences to determine the degree of the function. Then use technology to model the data provided.

x	1	2	3	4	5	6	7
f(x)	-4	-2	-4	-16	-44	-94	-172

Degree: _____ Function: _____