**Algebra II 3.7-3.10 Test Review Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Use the remainder theorem to find the remainders if

2x3 + 2x2 – 16x – 24 is divided by the following:

1. x – 2
2. x + 2
3. x – 5
4. x + 5
5. Choose ALL of the binomials above that are factors of 2x3 + 2x2 – 16x – 24.

3. Which is a third degree polynomial with -3 and 2 zeros?

1. x2 – 3x + 2 b) x3 + x2 – 3x + 2

c) x3 – x2 – 8x + 12 d) x3 + x2 + 2x – 3

4. Use the Binomial Theorem to expand (x – 2)3.

5. Use the Binomial Theorem to expand (3a + 2)4.

6. Use long division for x3 + 2x2 – 5x – 6 with a divisor of x - 3.

7. Use long division for x3 + 3x2 – x + 5 with a divisor of x + 2.

8. Use synthetic division for x3 + 2x2 – 5x – 6 with a divisor of x - 5.

9. Use synthetic division for x3 + 4x2 – 5x + 1 with a divisor of x + 3.

10. Factor completely x3 + 3x2 + 3x + 1

11. Factor completely x4 – 16.

12. F(x) = x4 – 81 is a polynomial function.

***Part A:*** How many zeros does *f* have?

What are the possible combinations of real and complex zeros?

***Part B:***Find the zero(s) of f(x) = x4 – 81.

Explain how you found your answer(s).

***Part C:*** Let g(x) = x4 + 81. How many real and complex zeros does *g* have?

Explain.

13. Graph . Identify any zeros, max, and min, and give the domain and range. State the end behavior of the graph.



Zeros:

Max:

Min:

Domain:

Range:

End Behavior:

14. Based on the equation, identify the zeros of the function and explain what happens at each zero.

