Algebra II

Unit 8 Review Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Divide. You may use long **or** synthetic division.

a)  b) 

c) 

2. **Use synthetic substitution** to find P(c) for the given polynomial P(x) and the given number c.

P(x) = x3 + 2x2 – 6x – 4 ; c = -2

3. Use the factor theorem to determine whether x + 1 is a factor of P(x). Show your work to receive full credit, and circle the answer.

P(x) =  Circle one: Factor or Not a Factor

4. Consider the polynomial 2x3 – 5x2 – 4x + 3.

a) State the number of possible factors.

b) State all of the possible roots by using the rational root theorem.

c) Draw a graph of the polynomial.

d) By using the calculator and/or synthetic division, write the polynomial in factored form.

5. Write a third-degree equation which has solutions of x = -3i, and x = 5.

6. Answer each question.

1. What is true about the tails of an even degree function?
2. What is the maximum number of “bumps” in a 6th degree polynomial?
3. Can an even degree polynomial have no x-intercepts?
4. Can an odd degree polynomial have no x-intercepts?
5. Can a polynomial with real coefficients have only one imaginary root?

7. Draw a graph for a fourth-degree polynomial equation that has two real roots.

8. Given the following entries from a table for a function L, use linear interpolation to estimate x to three significant digits if L(x) = 0.525.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | 1.5 | 1.6 | 1.7 | 1.8 |
| L(x) | 0.405 | 0.470 | 0.531 | 0.588 |

9. Consider the function y = x3 + 3x2 + 16x + 48

1. Draw a graph of the function. (A good viewing window is x-min = -10, x-max = 10, y-min = -60, and y-max = 60.)
2. Find the values of the **real** zeros of the function.
3. Find the values of the **imaginary** zeros of the function.

10. If r is **directly** proportional to s + 1, and r = 4 when s = 5, find r when s = 8.

11. The distance an object falls from rest is directly proportional to the square of the length of time it has fallen. If an object falls 64 feet in 2 seconds, how far will it fall in 3 seconds?

12. If y varies **inversely** with x, and y = 5 when x = 4, find x when y = 10.