

Secondary Math III
Finding All Zeros of Polynomials
Assignment 4.4

Name: _____
Period: _____

Factor completely and set each factor equal to 0 to solve the polynomial equation (find all the zeros)

1. $x^3 + 5x^2 - 6x = 0$

2. $x^3 + x^2 - 4x - 4 = 0$

3. $x^4 - 26x^2 + 25 = 0$

4. $4x^3 + x^2 - 4x - 1 = 0$

Given one solution, use synthetic division to find a quotient, write the function in factored form, then find all solutions.

5. $x^3 + 3x^2 - 4x - 12 = 0 ; x = -3$

6. $x^3 - 3x^2 - 6x + 8 = 0 ; x = 4$

7. $x^3 + 7x^2 + 7x - 15 = 0 ; x = -5$

Quotient:

Quotient:

Quotient:

Function:

Function:

Function:

Zeros:

Zeros:

Zeros:

Must Show Work for Credit!

Given a factor for the polynomial function, find the quotient and finish factoring (if possible). Find all zeros for the polynomial function.

8. $(x-4)$ is a factor of $f(x) = x^3 + 3x^2 - 18x - 40$

9. $(x+6)$ is a factor of $f(x) = x^4 + 4x^3 - 21x^2 - 36x + 108$

Use the Rational Root Theorem to determine possible zeros for each polynomial equation. Then solve completely, finding all real and complex zeros.

10. $x^3 - 2x^2 + 4x - 8 = 0$

Possible Zeros:

11. $x^3 - 7x + 6 = 0$

Possible Zeros: