



DATE:

SECTION:

OBJECTIVE:

Vocabulary

Linear factorization:

Complex numbers:

Standard Form:

Example:

Imaginary numbers:

Example:

$i = \underline{\hspace{1cm}}$ $i^2 = \underline{\hspace{1cm}}$ $i^3 = \underline{\hspace{1cm}}$ $i^4 = \underline{\hspace{1cm}}$

Complex conjugate:

If a complex number is a zero, they **always** come in _____ and are _____.

EXAMPLES

A) Identify the zeros of the function. B) Find the x-intercepts of its graph. C) Write the polynomial in standard form. Show work!

1. $f(x) = (x + 3)(x - 4)(x + 3i)(x - 3i)$

A) Write a polynomial function of minimum degree in factored form with real coefficients whose zeros include those listed. B) Find the degree of the polynomial (# of zeros). C) Identify the x-intercepts. Show work!

2. $-3, 1 - 4i$

3. 3 (multiplicity of 2), $2 + i$ (multiplicity of 1)

Find all complex zeros of each polynomial. Write the function in factored form. Show work!

4. $f(x) = x^4 - 3x^2 - 4$

Using the given zero, find all the remaining zeros of each polynomial. Write the function in factored form. Show work!

5. $2i$ is a zero of $f(x) = 3x^5 - 2x^4 + 6x^3 - 4x^2 - 24x + 16$