**5.6- Complex Zeros; Fundamental Theorem of Algebra**

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| **Fundamental Theorem of Algebra:**  Every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *f(x)* of degree \_\_\_\_\_\_\_\_ has at least \_\_\_\_\_\_\_\_\_ complex \_\_\_\_\_\_\_\_\_\_\_\_. | You can factor every complex \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ function of degree \_\_\_\_\_\_ into “n” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ factors.  Complex Zeros of a polynomial function means \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Conjugate Pairs Theorem:**  Basically says: “If \_\_\_\_\_\_\_\_\_\_\_ is a complex \_\_\_\_\_\_\_\_\_\_ of *f*, then it’s conjugate \_\_\_\_\_\_\_\_\_\_\_\_\_ is also a complex \_\_\_\_\_\_\_\_\_ of *f*.  \*\* Make sure to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when writing these out!  Ex: x=3*i* is one of the solutions of a polynomial of degree 2 | Writing in “completely factored form” or “as a product of **LINEAR** factors.  A polynomial of degree 5 whose coefficients are real numbers has the zeros –2, –3*i*, and 2 + 4*i*. Find the remaining two zeros. |
| **Finding a polynomial from its zeros:**  Find a polynomial *f* of degree 4 whose coefficients are real numbers and that has the zeros 1, 1, -4 + *i*.  Use the given zero to find the complex zeros of    And a zero exists at x=1+3*i* | **Find the Complex Zeros of a Polynomial Function**: |