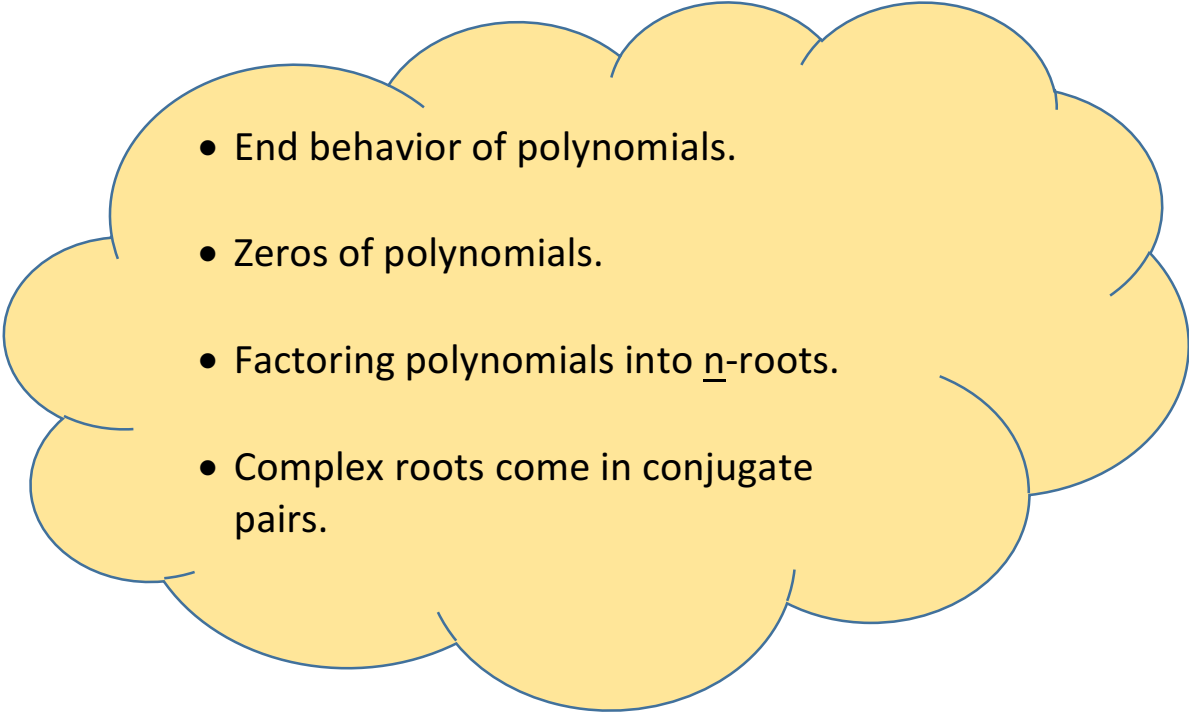


Unit 11: Polynomial functions

(Chapter 11, page 479)

End behavior in this chapter.

- 
- End behavior of polynomials.
 - Zeros of polynomials.
 - Factoring polynomials into n-roots.
 - Complex roots come in conjugate pairs.

--

<input type="checkbox"/>	Polynomial expression $P(x)$ ---- Term, coefficient, degree of term, degree of polynomial ---- Leading coefficient ---- <u>Zero</u> of $P(x)$ ---- Example:	
<input type="checkbox"/>	Polynomial equation $P(x) = 0$ ---- <u>Root</u> of $P(x)$	
<input type="checkbox"/>	Classifications: ---- Constant, Linear, Quadratic, Cubic ---- Monomial, Binomial, Trinomial	
<input type="checkbox"/>	$P(x) \div D(x) = Q(x) + \frac{R(x)}{D(x)}$ or equivalently: $P(x) = D(x) \cdot Q(x) + R(x)$ ---- Dividend, Divisor, Quotient, Remainder	Page 482
<input type="checkbox"/>	If $P(x) \div D(x)$ has a remainder of zero, than _____ is a factor of _____.	Page 481
<input type="checkbox"/>	Factors and Zeros	
<input type="checkbox"/>	---- Example: $P(x) = x^3 - 3x^2 - x + 3$ $x = 3$ is one zero. Find all the zeros.	

--

--

- -- Polynomial of degree 'n' has 'n' zeros
- Polynomial of degree 'n' can be factored into 'n' linear factors
- Multiplicity of a factor
- Complex roots come in conjugate pairs (<-- polynomial with real coefficients)
- Division by $(x - x_1)$, where x_1 is a root, leaves no remainder

(Theorem 11-2 through 11-5)

---- Examples: We have done MANY in class. See the worksheets, and put one here

--

--

<input type="checkbox"/>	Remainder theorem ---- Example:	Theorem 11-1
<input type="checkbox"/>	Rational roots theorem ---- Example:	Theorem 11-7
<input type="checkbox"/>	Descarte's rule of signs ---- And for negative real roots: $P(-x)$ ---- Example:	Theorem 11-8

--

--

	Graphing	
<input type="checkbox"/>	<p>---- End behavior: determined by order of polynomial and sign of leading coefficient</p> <p>---- Real roots represent x intercepts</p> <p>---- Linear factors of multiplicity 1 represent line crossing the x-axis</p> <p>---- Linear factors of multiplicity 2 represent parabola touching the x-axis</p> <p>---- Complex roots do not represent x-axis crossing</p> <p>---- There are no additional x-axis intercepts to these indicated by the real roots</p> <p>-----</p> <p>Examples:</p>	

--