MATH 150

Today

1. 4.1: Algebraic Functions

Goals:

1. Review exponents (Understand how to apply exponent laws)
2. Review polynomial operations (Understand how to factor and divide polynomials)
3. Power functions (Understand the form and graphs of power functions)
4. Polynomial functions (Understand the form and graphs of polynomial functions)
5. Rational functions (Understand the form and graphs of rational functions)

Where is today's material used?

1. Today's material contains fundamental tools of algebra, applicable anywhere mathematical modeling is used.
2. Power functions appear as components in mathematical models.
3. Polynomials appear as models in physics, economics, and chemistry, often as approximations to more complicated functions.

4.1 Algebraic Functions

1. Exponent laws and interpretation
2. Factoring polynomials (Rational Root Test/Integer Root Test)
3. Polynomial long division (including "my way")
4. Examples. p. 297: 23, 27, 41-60, 65-80

4.2 Power Functions

1. Definition ($f(x) = Ax^k, A \neq 0, k \in \mathbb{Q}$), domains
2. Integer exponents
3. Rational exponents
4. Graphs and end behavior
5. Derivatives
6. Examples. p. 309: 9, 23-30, 31-42, 43-46, 47-52, 53-62, 63-68, 69-72

4.3 Polynomial Functions

1. Definition, domains, terminology
2. Graphs of polynomials
3. "Turning points"
4. Roots/repeated roots
5. Examples. p. 322: 27-34, 35-42, 43-54, 55-62

4.4 Rational Functions

1. Definition, domains, terminology
2. Graphs of rational functions
3. Horizontal asymptotes
4. Slant/curve asypmtotes
5. Examples. p. 333: 19, 24, 31, 35, 42, 55, 56, 67

Next Time

1. Watch 5.1: Exponential and Logarithmic Functions [42 min]