## Math 110 (Section 002) Learning Objectives

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*Students should be able to do the following things by the end of each respective unit. Additions may be made as the term progresses.*

### The Power, Product and Quotient Rules

1. Explain why the term $(x+h)^n$ may be expanded as $x^n + na^{n-1}h + h^2 f(x,h)$ where $f$ is a polynomial in $x$ and $h$.

2. Show, using the limit definition of derivative and the "pseudo-binomial theorem" above, why the Power Rule holds for integer values of $n$.

3. Explain the steps of the proofs of the Product and Quotient Rules, given the proof.

4. Demonstrate the consistency between the Power, Product and Quotient Rules.

5. Differentiate functions using the Power, Product and Quotient Rules.

6. Find tangent lines, normal lines and horizontal tangent lines to curves using the Power, Product and Quotient Rules.