Section 2.5 Basic Differentiation Properties

Notation: If then , , and  all represent the derivative of *f* at *x.*

# Topic 1: Constant Function Rule

**Theorem:** **Constant Function Rule**

If  is a horizontal line with slope 0, then .

When we write  or , we mean that  when .

# Topic 2: Power Rule

**Theorem:** **Power Rule**

If , where *n* is a real number, then .

Also,  and .

# Topic 3: Constant Multiple Property

**Theorem: Constant Multiple Property**

If  where *k* is a constant, then .

Also,  and .

# Topic 4: Sum and Difference Properties

**Theorem: Sum and Difference Properties**

If , then .

Also,  and . This rule generalizes to the sum and difference of any given number of functions.

# Topic 5: Applications