**Colorado Technical University**

**Course:** MATH205 – Differential Calculus

#### Unit 1 Part 1 Readings: Increments and Rate of Change

**Increments**

An increment Δ is the final value minus the initial value:

Δ*x* (the change in *x*) = *x*final  *x*initial

Δ*y* (the change in *y*) = *y*final  *y*initial

**Average rate of change**

## The average rate of change is the total change in the dependent variable

## divided by the total change in the independent variable, or the slope

## or the tangent: m = *Always* include the units!

**Exact rate of change**

As the increments get smaller and smaller, the average rate of change over the increment becomes the exact rate of change for the entire function of graph

it becomes hard to do graphically, but algebra allows us to handle it:

as Δ*x* → 0 is called an *exact* rate of change

Usually written:

Δ *x* → 0

lim

or

