

# Homework #2

Due Friday (October 4th)

Name \_\_\_\_\_

1. (1 point) What does AROC, ROC (or IROC), and PROC stand for?

2. (2 points) Complete the table below

Types Of Change	Formula	Units	Key Phrases
Change	$f(x_2) - f(x_1)$ (or $y_2 - y_1$ )	Output Units	“increased(es)/decreased(es) by $f(x)$ output units ”
Percent Change			“increased(es)/decreased(es) by $f(x)\%$ ”
AROC			“increased(es)/decreased(es) on average by $f(x)$ output units per input units”
ROC (or IROC)			“increasing/decreasing by $f(x)$ output units per input units”
PROC			“increasing/decreasing by $f(x)\%$ per input units”

3. (2 points) Write the type of change described in each sentence. Highlight the key phrases in each sentence which led you to your answer.

- In November 2016, the number of Facebook users was increasing by 2 thousand per month.
- Between May 2006 and May 2007, the number of Facebook users increased by 89.4%.
- From May 2006 to May 2007, the number of Facebook users increased on average by 1.048 thousand per month.
- Between May 2006 and May 2007, the number of Facebook users increased by 12.58 thousand.
- In November 2006, the number of Facebook users was increasing by 12.5% per month

4. (5 points)  $v(t)$  meters per second is the velocity of an apple  $t$  seconds after it falls from a tree. Suppose  $v(0) = 0$ ,  $v(1) = 9.81$  and  $v'(1) = 4.905$ .

4.a. Give a sentence of interpretation for  $v(1) = 9.81$  (this means give a sentence of interpretation for the ordered pair  $(1, 9.81)$ ).

4.b. Give a sentence of interpretation for  $v'(1) = 9.81$  (this means give a sentence of interpretation for the (instantaneous) rate of change at  $t = 1$ )

4.c. Give a sentence of interpretation for the percent rate of change of the velocity of the apple 1 second after it falls from the tree (you need to calculate the percent rate of change first).

4.d Give a sentence of interpretation for the change of the velocity of the apple between 0 and 1 seconds (you need to calculate the change first).