Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student ID# (last 4 digits) \_\_\_\_\_\_

Instructions: This is not a graded event but a study aid. Work all problems to build experience and speed. You will have 10 minutes. Underline your answers.

Section 1: Using the composition function evaluate the work the following problems.

1. Given: f(x) = x2 – x

g(y) = y – y2 both x and y are members of ***R***

Find: (f ∙ g)(y) evaluated for y = 3

1. Given: g(x) = 2x – 3 from the set ***S*** = {1, 7, 9}

f(y) = 2y-1 Note: Set ***S*** maps to ***T*** in a one to one relation for a bijection function where ***T*** is the set of 2nd numbers in the order pair

Find: a. (g ∙ f)(y)

b. Identify the resulting ordered pair set

Section II: Permutations (see page 394-5 of your textbooks for definitions of the *array form* and *cycle form* of a function)

Find the array form of the following set of ordered pairs.

1. *f* = {(2, 7), (3, 9), (4, 11), (5,5)}
2. *f* = {(3,7), (10, 10), (56, 60), (70, 70), (90, 94)}
3. *f* = {(22,1), (32, 32), (42, 3), (52, 4), (62, 5)}

Section III: Find the ordered pair form of the following functions.

*f* =

645 700 845 900

600 700 800 900



*f* =

a b c d

z y x w



Section IV: Find the cycle form of the following functions.

1. Let *A* = {1, 2, 3, 4, 5} *f* = (5, 2, 3) *g* = (3, 4, 1)

Find: cycle form for *f ∙ g*

1. Let *A* = {1, 2, 3, 4, 5} *f* = (1, 2, 3, 4) *g* = (3, 2, 4, 5)

Find: Cycle form for *g ∙ f*

1. Let *A* = {1, 2, 3, 4, 5} *f* = (1, 2, 3) *g* = (2, 3, 5)

Find: Cycle form for *f ∙g*