MATH 165.02 **Homework** **Due: 12 September 2012**

(1) Complete the following IN-OUT machine tables. Describe the rules for each of these machines as precisely and concisely as you can.

IN	OUT
7	4.6458...
9	5
14	5.7417...
49	9
100	12
1	
0	
13	
1000	
♣	

IN_1	IN_2	OUT
2	3	8
4	1	6
7	4	30
6	8	50
3	10	32
2	7	
8	4	
5	4	
♯	♭	

IN	OUT
1	1
7	2
8	2
9	3
2	1
10	3
99	9
100	10
16	
9999	
10000	
	14

IN_1	IN_2	OUT
time	energy	21
quarter	tie	18
interest	go	13
friend	into	21
speed	sound	22
picture	way	18
telephone	picture	60
summary	seen	
special	test	
tried	hard	
		5
		10

(2) For each of the IN-OUT machines in the last exercise, come up with a different rule that fits only part of the data (at least two of the rows). Describe the rule carefully and explain which of the rows do not fit the different rule.

(3) For each of the following, write the happy number that comes before and after.

_____ , ☺ , _____ _____ , ♡ , _____

_____ , , _____ _____ , ☺☺ , _____

Translate the following Arabic numbers to happy numbers, and happy numbers to Arabic.

$23 =$ _____ $57 =$ _____ $85 =$ _____

$\Delta\square =$ _____ ♡☺♡ = _____ $\star =$ _____

(4) Write an essay expanding on your positive experiences in your math classes. Describe one or two such experiences in detail. What made them positive? What did you do, and what did the teacher do to make them positive experiences? How can you use this experience in *your* future teaching?