Math 113(2) - Comments for HW9

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Some general comments:

1. Please use staplers or clips, not just fold the left-upper corner of papers!
2. Try to write well! - maybe this will be harder than the first one...
3. If you can, try to use LaTeX.
4. For questions that requires proofs, I almost not give any partial credits.

Section 16, Problem 17

1. (a) (4 points)
2. (b) (2 points)
3. (c) (4 points) 2 points for each direction.

Section 18, Problem 42

For this problem, you should be careful what your symbols mean. For example, There are two unities in the problem that we have to prove that are same. Also, when you write "x^{-1}", you should mention if it is an inverse in a larger field or a smaller field. You can't assume that there multiplicative inverse in both field are equal. If you miss this point, I deducted 3 points.

For example, the following argument is wrong: Let x be a nonzero element in K, which is a subfield of F. Then we have $1_K = xx^{-1} = 1_F$, so $1_K = 1_F$. The first equality holds as $1_K = xx_K^{-1}$, but the second equality is $xx_F^{-1} = 1_F$, and we don't know whether $x_K = x_F$ or not *yet*, which is true if $1_K = 1_F$. So this is a circular argument.

When you use the equation $x^2 = x$ in the proof, you also have to be careful which field are you considering to solve the equation.

Section 19, Problem 23

$a^2 = a \Leftrightarrow a(a-1)$.