Math 113(2) - Comments for HW10

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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 20, Problem 14

It is okay to write the solution as $x \equiv 3 \,(\mathrm{mod}\, 8)$.

Section 20, Problem 29

$n^{p-1} \equiv 1 \,(\mathrm{mod}\, p)$ holds *if $p \nmid n$*. You have to check this case seperately (i.e. when $\gcd(n, 383838) \neq 1$). Otherwise, you can only get 9 points. Also, if you only prove for $37 | n^{37} - n$ and just said that "we can do similarly for the rest", you can only get 9 points, since they are a little different from the 37 case.

Some of them write $n|19$ or something like this. $a|b$ means that b can be divided by a, not a can be divided by b. For example, $2|4$, not $4|2$.

Section 21, Problem 2

If you only show that $\mathrm{Frac}(D) \subseteq \mathbb{Q}(\sqrt{2})$, you can get only 8 points. You have to show the other direction (which is very easy to check). There are many students who only checked one direction by using the rationalization of a denominator.

Some only showed that $\mathbb{Q}(\sqrt{2}) = \{a + b\sqrt{2} \,:\, a, b \in \mathbb{Q}\}$ is a field. What you have to show here is that $\mathrm{Frac}(D) = \mathbb{Q}(\sqrt{2})$, not just that $\mathbb{Q}(\sqrt{2})$ is a field. "$D \subseteq \mathbb{Q}(\sqrt{2})$ *and since* $\mathbb{Q}(\sqrt{2})$ *is a field, we get* $\mathrm{Frac}(D) = \mathbb{Q}(\sqrt{2})$" is a wrong argument. You still have to show that $\mathbb{Q}(\sqrt{2}) \subseteq \mathrm{Frac}(D)$.

6 points if you only given an answer without any explanation.