Recitation 01/17

Class Annoucements and Reminders

- Address the issue about syncing scores between top hat and Canvas grade books for students who were enrolled `top hat` courses (either lecture course or recitation course) with a-number@aggies.usu.edu . Remind these students to change the address to a-number@usu.edu
- Remind students to always check their responses and grades in `Top Hat` gradebook right after each question presentation was ended. Note that students will not be able to see their responses and grades until you end the question/presentation in Top Hat.
- Address that students are responsible for regularly checking their grades on Canvas > Grades. By the course policy, they have up to 10 days to dispute any discrepancies after the grades were posted. They should receive a message from Canvas notifying any changes that were made or updated on their grade books. If not, they will need to review/update their notification settings . You may advise students to following the links below:
  - How do I manage my Canvas notification settings as student?
  - How do I manage my Canvas notification for a signle course as a student?
- Student can review all presented `Top Hat` questions (with their responses) under `Assigned` > `Review`
- Show upcoming due dates and events from Canvas > Course Summary
  - Class Prep 3 due on Wednesday, the 18th by 9am.
  - Class Prep 4 due on Friday, the 20th by 9am.
  - Lesson 1 : Complex Number assignment due 2023-01-22
  - Lesson 2: Solving Equations assignment due 2023-01-26
  - CBE 1 FIRST due date without late penalty on 2023-02-04
- Encourate students to Schedule an Exam on the tesing center website as soon as possible and be aware of the reduced hours (8:30am-2:30pm) at the tesitng center on every Saturday. Their regular hours are 8:30am-8:30pm.
- Encourage students to get help at our AMLC.
- Suggested Reading can be found on the Canvas course homepage (under the syllabus link) and in every units in Canvas > Modules.

- All lecture recordings are available in Canvas > Media Gallery.

Preparing for Top Hat Questions

- Copy `Recitation 3 (January 17) folder` from `MATH 1050 Recitation (Master)` course in Top Hat.
- Detailed solutions to `top Hat` questions/examples can be found via OneNote Class Notebook > Spring 2023 math-1050-001 > Teacher Only > Recitation Solutions
- Suggested Reading can be found on the Canvas course homepage (under the syllabus link) and in every units in Canvas > Modules.
- All lecture recordings are available in Canvas > Media Gallery.

Learning Targets

- Lesson 2 Solving Equations
- CBE 1 Questions 3-5 (similar to questions 2, question 4 and question 6 for today's recitation)

In-Class Activities

Group work is recommended. Plan on organizing student groups. If any students want to work alone, please allow them to do so.

1. Present Top Hat questions, slides and examples **in the same order as what being arranged in** `MATH 1050 Recitation (Master)` course in Top Hat.
2. For a `question`, let students work on the problem. Show students the class responses and show the solutions if not all students got the correct answer. If all got correct, just ask students if there is any questions. If majority got right, you may briefly show the the solution and ask stuents if there is any specific questions. If majority got wrong, you may need to go over the problem in more details.
3. For an `example`, work on the example with class on the whiteboard or annotate on the classroom computer screen using OneNote. Please DO NOT annotate anything on my OneNote `MATH 1050 Recitation (Master)` class notebook. If you would like to have your own class notebook for your recitation(s) and allow students to have access to it (like mine), let me know.

4. All `Top Hat` questions are open-ended questions (similar to what on CBEs). For open-ended questions, there will be no `Responses` button to show students' statistics (i.e. horizontal bar chart) during your presentation. You will need to first end the presentation and then you will see the `Correct Responses` on the top of the question (under the `edit` button)
5. I just created a `dummy` recitation course in `Top Hat` for you. You should now have access to your new `dummy` course on your Top Hat dashboard. You may create a fake student from https://tophat.com/students/ and have it enroll in your `dummy` recitation course in `Top Hat`. Using your `dummy` course and your fake student, you may then
   - practice on how to present Top Hat materials;
   - see the materials from a student view;
   - understand how students should enter their answers for an open-ended questions. The method that I use to grade most open-ended questions should mark any answers that are `symbolically equivalent` to the answer key. You can always see the exact correct answer by clicking `Edit` on the top right on each question. For example, $\frac{-3+\sqrt{41}}{8}$ is symbolically equivalent to $\frac{1}{8}\left(\sqrt{41}-3\right)$. So Top Hat (and also CBEs in Canvas) should mark either one correct. Similarly, the order of multiple answers as the solutions to an equation does not matter. In other words, the solution set $\{1,2,3\}$ is symbolically equivalent to $\{3,2,1\}$. However, there is a glitch on this grading method (see my notes on Question 1 and on Worksheet 6 below)
6. Materials presented during last lecture and today's recitation will help students do most of practice problems (except quesiton 8) on Lesson 2 (Solving Equations) assignment. Question 8 on the assignment is about `Solving an equation that is quadratic in form` which will be discussed during next lecture. Question 6 on `CBE 1` is also about `Solving an equation that is quadratic in form`
7. Address that there are usually multiple ways to solve an equation. If student struggles with one method, it might be a good idea to try another method. Trying different methods and check if the answers from the methods are the same is a good practice.
8. Due to the time constraint, you might not be able to present all methods that can be used to solve an equation. However, you might ask students to see which method that the majority use and if they need help with this commond method. If not, you could show another method (if time is allowed) to see if they would like it better.
9. Question 1 is similar to question 4 on Lesson 2 assignment.
   - **Common Difficulty on question 1:** Students have a difficult time to apply `difference of squares` $a^2-b^2=(a-b)(a+b)$ because (1) they don't know how to rewrite $25x^2$ into $(5x)^2$ using the rule $(c\cdot d)^2=c^2\cdot d^2$ and/or (2) they have a hard time to see $5x$ as the a term in the `difference of squares` formula.

- **Possible Glitch:** Top Hat (and also Canvas > CBEs) might mark $\frac{-6}{5}$ wrong. Instead, ask students to enter $-\frac{6}{5}$ which will be marked correct on Top Hat (and also Canvas > CBEs). Note that both Top Hat and Canvas use the same thrid-party technology to create a `math response` question.

10. Question 2 is similar to question 5 on Lesson 2 assignment and question 3 on CBE 1. Note that the difference between question 1 and question 2 is that the numbers on the right-hand sides of the equations are 0 vs. 9. The left-hand side of the equations are the same ($(5x+6)(5x-6)$ or $25x^2-36$).
    - **Common Mistake on question 2:** Students simply set each factor equal to zero and solve for x (i.e. $5x+6=0$ and $5x-6=0$)
11. Question 3a Please quickly review how to find the LCD of this quadratic equation (with coefficients in fractions). Students will use the same concept to find LCD of a rational function in worksheet 4.
12. Question 3b I'm guessing majority will use `FOIL` method to expand $(x+2)^2$ instead of using the `Perfect Square Trinomial` formulas ($(a+b)^2=a^2+2ab+b^2$ and $(a-b)^2=a^2-2ab+b^2$). If time is allowed, quickly remind them on this alternative trick.
13. I have not shown how to do questions similar to questions 4,5 and 6 on today's top hat questions. However, they should have enough basic skills required to solve these problems.
14. Worksheet 4 Please show how to find the LCD of the rational function. Also, remind students to check for any `extraneous solutions` (i.e. check if any answers that make any denominator equal to zero.)
15. Worksheet 5 If you are running out of time, you may skip question 5 but present the example on the slides. The goal is to help students know just enough to know how to solve the basic radical equation $\sqrt{25x+7}=0$ from using the `zero-product principle` on question 6.
16. Worksheet 6
    - Help students get started by suggesting them to use the `zero-product principle` (i.e. set up each factor equal to zero and then solve for the unknown x).
    - To solve $4x^2+3x-2=0$, students will need the `quadratic formula` .
    - There are multiple ways to solve $4x^2-20x+25=0$:
        - Factoring using the `ac` method (see my detailed solution on OneNote or Factor Trinomials using the "ac" method from OpenStax > Intermediate Algebra 2e).
        - Factoring using the `diamond` (or `X`) method. (Watch this tutorial video or see my solution). Some students mentioned to me that they used this method in their high schools.
        - Apply the `quadratic formula`

- **Possible Glitch:** Top Hat (and also Canvas > CBEs) might mark $\frac{-7}{25}$ wrong. Instead, ask students to enter $-\frac{7}{25}$ which will be marked correct on Top Hat (and also Canvas > CBEs). Note that both Top Hat and Canvas use the same thrid-party technology to create a `math response` question.

17. If time is allowed, allow students to ask/practice any questions from
    - Lesson 1 (Complex Number) assignment;
    - Lesson 2 (Solving Equation) assignment.
    - CBE 1 Practice
18. Change the setting on Top Hat to review mode after class: (1) Click `Recitation 3 (January 17 )` folder, (2) Choose the questions that were presented; (3) then click `Assign' on top right` and `Review (not graded)`

Reflection (optional)

After your recitaiton(s), please briefly let me know the following if applicable:

- Which in-class activities you could not finish?
- What went well?
- What did not go so well?
- Any suggestions?

Student Issues

After your recitaiton(s), please keep record on any student issues to be addressed by you. If they are for me to be addressed, please let me know. For each issue, please include the following basic information

Student Name:
Recitation Section Number:
Recitation Time:
Recitation Leader:
Describe the issue:
Recitation Time:
Recitation Leader:
Describe the issue:

Notes