

A Tutorial for Students Using MapleTA

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1 For the computationally incompetent or uninterested.

If you are comfortable using a web browser to buy something online, or identify that large spider you just found in your basement, you can move on to the next section. For those who are suspicious of computers, let me put you at ease. Using mapleTA as a tool to learn mathematics only involves reading and a little typing. A computer is involved, but only in the most unobtrusive way.

2 What is MapleTA?

MapleTA is an automated, web-based testing and quizzing package powered by Waterloo Maple's computer algebra engine. Instructors can design true/false, multiple choice and a wide variety of free response questions. You can use it from any mainstream web browser. It permits the instructor to phrase free response questions that can be answered a variety of ways. For instance, if the correct answer is $x^2 - 2$ and you respond $(x + 1)(x - 1) - 1$, your solution would receive full credit.

3 Getting started

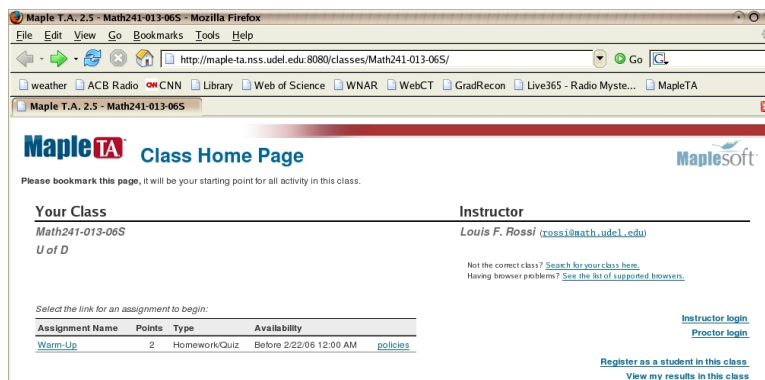
To use MapleTA, you must have your browser configured properly. Both `java` and `javascript` must be enabled. Usually, this is already the case, but you should check your browsers `settings` or `preferences` menus just to be sure.

Next, you must go to your course web page. Your instructor has probably given you a link to follow. If your instructor has not given you a link, you can try to find your web page by going straight to the server.

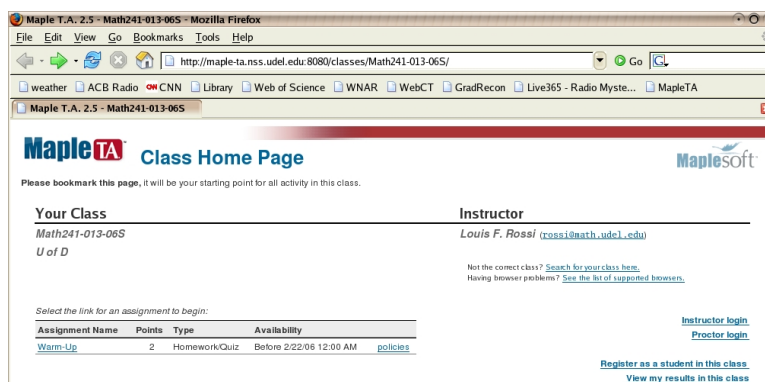
`http://maple-ta.nss.udel.edu:8080`

There, you can click on "Find your class" and search for your class name, your instructor's name or your instructor's email.

When you arrive at your class home page, it should look something like this.



A list of assignments appears on the left. A list of actions appears on the right. If you have not yet done so, you need to do is create an account for yourself by clicking on “Register as a student in this class.” You should only do this once.

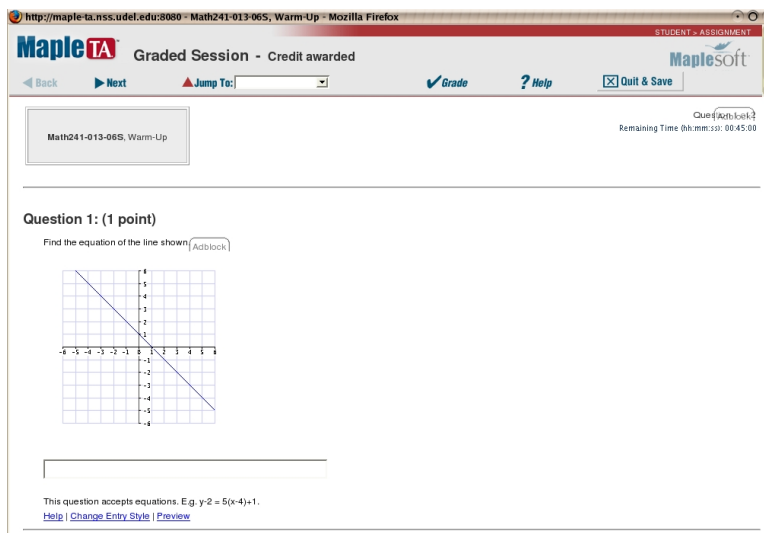


You must fill in all the required information, but **do not enter your student ID #.** **Instead, enter your discussion section number (e.g. “041D”).** Once you have registered as a user for the class, you can use your login name and password to use any of the assignments posted by your instructor.

4 Trying an assignment

To use MapleTA, you will need a pencil and paper, just like you do when you are doing a mathematical problem out of your book.

Starting at the class home page, you can try an assignment by clicking on its link. For this point, you will be asked for your login name and password. Once you are authenticated, MapleTA will start asking you mathematical questions. You will always be told what sort of response is expected. For instance, the proper response may be an equation like $y = 2x + 1$, a formula $x^2 + \cos(x)$, or you might be asked to sketch a curve. Here is an example of what you might see.



Notice that there is a box where you enter your response. Underneath the box, you are told that you must enter an equation. If you enter a response and move on, you can always go back and make changes. Your responses are not scored until you punch the **Grade** button. If you are confused about anything, the **Help** button is always available to you.

If you want to take a break and come back later, you can **Quit & Save**. If you confirm this request, you will go back to the class home page. The next time you choose to try the assignment again, you will return to the one that you saved.

When you are done, you must punch the **Grade** button. At this time, if you have left any questions blank, MapleTA will warn you that some questions have not been answered, and it will give you the option of going back and trying them. If you are sure that you really do want to have it graded (unanswered questions and all), then punch the **Grade** button again. **It is crucial that you remember to grade your work.** Credit cannot be awarded unless the student chooses to grade their assignment.

5 Entering a mathematical expression

The most direct way to respond to enter either an equation or a formula is in “calculator mode”. This is where you would type your answer very much like you would enter it on a calculator. For instance, if you want to type

$$\frac{3x^2 \sin(2x)}{x - 1},$$

you would type:

$$3 * x^2 * \sin(2 x)/(x-1)$$

or even

$$3 x^2 \sin(2 x)/(x-1)$$

Notice that MapleTA can infer multiplication in an expression like $3x$.

MapleTA knows all about \sin , \cos and \tan . Check the help pages to see all the special mathematical functions it knows. It also knows that “ $x^{(1/2)}$ ” is the same as \sqrt{x} or you could enter “`sqrt(x)`” if you like.

Those with a keen eye will notice that there is an option under the free response box that reads “Preview”. It will show your entry in a nice typeset format, so you can see your formula or equation more clearly.

The same sharp-eyed reader may also have noticed another option that reads “Change Entry Style” under the free response box. This provides a “symbol mode” graphical user interface. If you change the entry style, the change will go into effect for the next question you answer.

It is one thing to miss a question because you may have solved the problem incorrectly, but it is frustrating to miss a question because you entered the correct solution incorrectly. Here are some common mistakes to avoid to make sure that MapleTA correctly understands what you are typing.

- **Let MapleTA do some of the work for you.** If a problem involves some arithmetic, Maple’s symbolic engine can resolve it for you. For instance, if you differentiate a function and find the solution to be

$$\frac{3(x-1)^2(x+2) - (x-1)^3}{(x+2)^2},$$

you could simplify your result on paper and enter it into the computer. However, this takes time and could introduce a careless error into the problem. Instead, you can enter it into MapleTA.

```
(3 (x-1)^2 (x+2) - (x-1)^3)/(x+2)^2
```

- **Use parentheses for functions.** MapleTA can infer a lot from context but it cannot read your mind. If you want to enter $\cos(2x)$ you must enter “`cos(2 x)`” or “`cos(2*x)`” but never “`cos 2 x`”. The latter would be interpreted as $\cos(2) \times x$ which is not what you meant.
- **Do not use brackets []’s.** Only use nested parentheses.
- **Use $\exp(x)$ rather than e^x .** Maple has always had problems recognizing e as Euler’s constant. Instead, use $\exp(x)$. Thus,

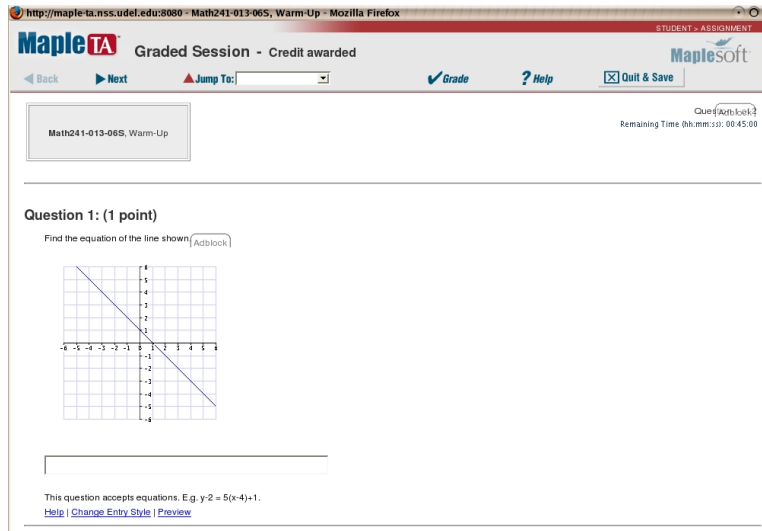
$$e^{2x^2-1}$$

should be entered as

```
exp(2 x^2 -1)
```

6 Sketching a graph

Some problems in MapleTA require you to sketch a function. You will be presented with an empty graph, and you can sketch the function by clicking on points along the curve. Your function will be represented by a blue curve passing through all of your points.



The screenshot shows a web browser window with the URL `http://maple.ta.nss.udel.edu:8080/Math241-013-06S, Warm-Up - Mozilla Firefox`. The page title is "MapleTA Graded Session - Credit awarded". The interface includes navigation buttons for "Back", "Next", "Jump To:", "Grade", "Help", and "Quit & Save". A "Math241-013-06S, Warm-Up" box is visible. The main content area displays "Question 1: (1 point)" with the instruction "Find the equation of the line shown (Autoblock)". Below this is a coordinate plane with a grid. The x-axis ranges from -5 to 4, and the y-axis ranges from -4 to 4. A blue line is plotted, passing through the points $(-1, 0)$, $(0, -1)$, and $(1, -2)$. Below the graph is an empty text input field. At the bottom, a note states "This question accepts equations. E.g. $y-2 = 5(x-4)+1$." with links for "Help", "Change Entry Style", and "Preview".

If you make a mistake, you can move a point by click-and-holding it and moving it to a new position. You can also delete a point by clicking on it and then choosing the “Delete selected” option. Be careful not to drag a point off the graph. I do not know of a way to get it back except for clearing the graph and starting the sketch over.