WeBWorK at UMM

You are using the online homework WeBWorK so you can get some additional feedback on homework problems. This is not meant to replace the homework problems you submit in class, but as another opportunity to work on practice problems where you can get immediate feedback on whether or not you have the correct answer.

Your goal in WeBWorK is more than just to get the right answer. You should be making sure that you are learning from the problems, not just doing them. When you successfully complete a problem, you should pause and reflect, making sure that you can quickly do similar problems. If you don't understand how you got the right answer after some reflection, stop by office hours so we can talk about that particular problem.

Start problems early so you have time to seek out assistance if needed! I generally do not give WeBWorK extensions.

How to Login

- **username:** the part before @ in your UMM email (abcd123@morris.umn.edu has username abcd123)
- **initial password:** your student ID number (change it to something else once you login)
- if you cannot login after a couple of tries email me and I will reset your password

Homework Sets

- When you login, you will be presented with different homework sets you can work on. All students in the class gets similar problems, but each student will get their own individualized problems in a homework set.
- **Each homework set has a due date, after which you will not be able to get any credit for completing those problem sets.** When a problem set closes, the answers will be available to you.
- Once you select a homework set, you can
    - Download PDF of the problem sets if you like, and work on them away from the computer. Or you can work on some scratch paper and complete problems while you are still right in front of the computer.
    - Follow the link to *functions and symbols* syntax if there is a mathematical symbol you don't know how to input.
    - Complete some of the problems and return later to complete the rest, and the computer will remember the ones you have already completed.

Individual Problems

- Preview My Answers button shows you the formatting of the answers you typed in. This can be helpful to make sure your syntax is correct, for example to see the difference between 1+2/3+4 and (1+2)/(3+4).

- Check Answers button checks your answers and can give you some feedback in some cases, but does not submit your answers for grading.

- Submit Answers button is used to submit your answers for grading. The grade will show up below the buttons after you submit your answers. To get credit for a correct answer you must enter your answer online using the Submit Answers button! The computer system will keep track of your progress, so neither our TA nor myself will be grading these problems. Generally there is **no penalty for the number of attempts on a particular problem,** but if you get up to 10 or more attempts and haven't gotten the correct answer, set that problem aside and talk with someone about it (me, tutor, peer).

- Email Instructor button is used to send an email to me. The email will show me your particular problem, so I prefer you use this method to ask questions arising in WeBWorK. You can email me for each problem you have a question on in a homework set. **Try to include plenty of detail on how you have tried to solve the problem (not just the final answer you have).** You can also stop by office hours with WeBWorK questions.

- Some problems allow you to earn partial credit. You will always retain the highest partial credit you have earned from all attempts, so if you try again and do worse you aren't penalized.

- If you have difficulty getting WeBWorK to accept an answer you are <u>sure</u> is correct, send me an email from within WeBWorK from the problem using Email Instructor and move on to other homework.

- If WeBWorK seems to be impossibly slow or you have other trouble with the system, send me an email and go work on some of your other homework.

WeBWorK Syntax

There is a link to a more complete list of functions and symbols at the start of each problem set in WeBWorK. Note the syntax for WeBWorK is different than the syntax for *Mathematica*!

Mathematical Constants Available In WeBWorK
- pi gives 3.14159265358979, e.g. cos(pi) is -1
- e gives 2.71828182845905, e.g. ln(e*2) is $1 + \ln(2)$

Mathematical Symbols Available In WeBWorK
- + Addition
- $-$ Subtraction
- * Multiplication can also be indicated by a space or juxtaposition, e.g. 2x, 2 x or 2*x, also 2(3+4).
- / Division
- ˆ or ** You can use either ˆ or ** for exponentiation, e.g. 3ˆ2 or 3**2
- () You can also use square brackets, [ ], and braces, { }, for grouping, e.g. [1+2]/[3(4+5)]
- $\sqrt{x}$ is given by sqrt(x)
- $\ln(x)$ is given by ln(x) (some problems use log rather than ln for natural logarithm)
- $|x|$ is given by abs(x)
- $\cos x$ is given by cos(x) (and uses radian measure)

Syntax for entering expressions
- Be careful entering expressions just as you would be careful entering expressions in a calculator.
- Sometimes using the * symbol to indicate mutiplication makes things easier to read. For example (1+2)*(3+4) and (1+2)(3+4) are both valid. So are 3*4 and 3 4 (3 space 4, not 34) but using a * makes things clearer.
- Use ('s and)'s to make your meaning clear. You can also use ['s and]'s and {'s and }'s.
- Don't enter 2/4+5 (which is 5.5) when you really want 2/(4+5) (which is 2/9).
- Don't enter 2/3*4 (which is 8/3) when you really want 2/(3*4) (which is 2/12).
- Entering big quotients with square brackets, e.g. [1+2+3+4]/[5+6+7+8], is a good practice.
- Be careful when entering functions. It's always good practice to use parentheses when entering functions. Write sin(t) instead of sint or sin t. But WeBWorK is smart enought to accept sin t or even sint. However, sin 2t is interpreted as sin(2)t, i.e. (sin(2))*t. Be careful.
- Do not enter sinˆ2t even though you might see something like this written in a text book. Mathematically speaking sinˆ2t is shorthand for (sin(t))ˆ2(the square of sin of t) and must be entered this way. (You can enter it as sin(t)ˆ2 or even sintˆ2, but don't try such things unless you really understand the precedence of operations. The "sin" operation has highest precedence, so it is performed first, using the next token (i.e. t) as an argument. Then the result is squared.)
- Is -5ˆ2 positive or negative? It's negative. This is because the square operation is done before the negative sign is applied. Use (-5)ˆ2 if you want to square negative 5.
- When in doubt use parentheses!!!
- The complete rules for the precedence of operations, in addition to the above, are

  – Multiplications and divisions are performed left to right: 2/3*4 = (2/3)*4 = 8/3.
  – Additions and subtractions are performed left to right: 1-2+3 = (1-2)+3 = 2.
  – Exponents are taken right to left: 2ˆ3ˆ4 = 2ˆ(3ˆ4) = 2ˆ81 = a big number.

synatx from http://webwork.maa.org/wiki/Available_Functions