1.(1 pt) This problem demonstrates how you enter numerical answers into WeBWorK.

Evaluate the expression $3(-2)(10 - 7 - 2(11))$: _____

In the case above you need to enter a number, since we're testing whether you can multiply out these numbers. (You can use a calculator if you want.)

For most problems, you will be able to get WeBWorK to do some of the work for you. For example
Calculate (-2) * (10): _____

The asterisk is what most computers use to denote multiplication and you can use this with WeBWorK. But WeBWorK will also allow use to use a space to denote multiplication. You can either $-2 * 10$ or -20 or even $-2\ 10$. All will work. Try them.

Now try calculating the sine of 45 degrees (that's sine of pi over 4 in radians and numerically $\sin(pi/4)$ equals 0.707106781186547 or, more precisely, $1/\sqrt{2}$). You can enter this as sin(pi/4) , as sin(3.1415926/4), as 1/sqrt(2), as 2**(-.5), etc. This is because WeBWorK knows about functions like sin and sqrt (square root). (Note: exponents can be indicated by either a "caret" or **). Try it.
$\sin(\pi/4) =$ _____

Here's the **list of the functions** which WeBWorK understands. WeBWorK ALWAYS uses radian mode for trig functions.

You can also use jutaposition to denote multiplication. E.g. enter $2\sin(3\pi/2)$. You can enter this as 2*sin(3*pi/2) or more simply as 2sin(3pi/2). Try it:

_____

Sometimes you need to use ( )'s to make your meaning clear. E.g. 1/2+3 is 3.5, but 1/(2+3) is .2 Why? Try entering both and use the "Preview" button below to see the difference. In addition to ( )'s, you can also use [ ]'s and { }'s.

You can always try to enter answers and let WeBWorK do the calculating. WeBWorK will tell you if the problem requires a strict numerical answer. The way we use WeBWorK in this class there is no penalty for getting an answer wrong. What counts is that you get the answer right eventually (before the due date). For complicated answers, you should use the "Preview" button to check for syntax errors and also to check that the answer you enter is really what you think it is.

2.(1 pt) This problem demonstrates how you enter function answers into WeBWorK.

First enter the function sin x. When entering the function, you should enter sin(x), but WeBWorK will also except sin x or even sinx. If you remember your trig identities, $\sin(x) =$ -cos(x+pi/2) and WeBWorK will accept this or any other function equal to sin(x), e.g. sin(x) +sin(x)**2+cos(x)**2-1

We said you should enter sin(x) even though WeBWorK will also except sin x or even sinx because you are less likely to make a mistake. Try entering sin(2x) without the parentheses and you may be surprised at what you get. Use the Preview button to see what you get. WeBWorK will evaluate functions (such as sin) before doing anything else, so sin 2x means first apply sin which gives sin(2) and then mutiple by x. Try it.

Now enter the function $2\cos t$. Note this is a function of t and not x. Try entering 2cos x and see what happens.

3.(1 pt) This problem will help you learn the rules of precedence, i.e. the order in which mathematical operations are preformed. You can use parentheses (and also square brackets [ ] and/or curly braces { }) if you want to change the normal way operations work.

So first let us review the normal way operations are performed.

The rules are simple. Exponentiation is always done before multiplication and division and multiplication and division are always done before addition and subtraction. (Mathematically we say exponentiation takes precedence over multiplication and division, etc.). For example what is 1+2*3?

and what is $2 \cdot 3^2$?

Now sometime you want to force things to be done in a different way. This is what parentheses are used for. The rule is: whatever is enclosed in parentheses is done before anything else (and things in the inner most parentheses are done first).

For example how do you enter

$$\frac{1 + \sin(3)}{2 + \tan(4)}$$

? Hint: this is a good place to use [ ]'s and also to use the "Preview" button.

Here are some more examples:
(1+3)9 =36, (2*3)**2 = 6**2 = 36, 3**(2*2) = 3**4 = 81, (2+3)**2 = 5**2 = 25, 3**(2+2) = 3**4 = 81
(Here we have used ** to denote exponentiation and you can also use this instead of a "caret" if you want). Try entering some of these and use the "Preview" button to see the result. The "correct" result for this answer blank is 36, but by using the "Preview" button, you can enter whatever you want and use WeBWorK as a hand calculator.

There is one other thing to be careful of. Multiplication and division have the same precedence and there are no universal rules as to which should be done first. For example, what does

2/3*4 mean? (Note that / is the "division symbol", which is usually written as a line with two dots, but unfortunately, this "line with two dots" symbol is not on computer keyboards. Don't think of / as the horizontal line in a fraction. Ask yourself what 1/2/2 should mean.) WeBWorK and most other computers read things from left to right, i.e. 2/3*4 means (2/3)*4 or 8/3, IT DOES NOT MEAN 2/12. Some computers may do operations from right to left. If you want 2/(3*4) = 2/12, you have to use parentheses. The same thing happens with addition and subtraction. 1-3+2 = 0 but 1-(3+2) = -4. This is one case where using parentheses even if they are not needed might be a good idea, e.g. write (2/3)*4 even though you could write 2/3*4. This is also a case where previewing your answer can save you a lot a grief since you will be able to see what you entered.

Enter 2/3*4 and use the Preview button to see what you get.

4.(1 pt) This problem demonstrates a WeBWorK True/False question.

Enter a T or an F in each answer space below to indicate whether the corresponding statement is true or false.
You must get all of the answers correct to receive credit.

___1. $-5 < -8$
___2. $-8 \leq -8$
___3. $9 - 1 \leq 9$
___4. $\pi \geq 3.1416$

Notice that if one of your answers is wrong then, in this problem, WeBWorK will tell you which parts are wrong and which parts are right. This is the behavior for most problems, but for true/false or multiple choice questions WeBWorK will usually only tell you whether or not all the answers are correct. It won't tell you which ones are wrong. The idea is encourage you think rather than to just try guessing.

In every case all of the answers must be correct before you get credit for the problem.

5.(1 pt) This problem demonstrates a WeBWorK Matching question.

Match the statements defined below with the letters labeling their equivalent expressions.
You must get all of the answers correct to receive credit.

___1. The distance from x to -1 is more than 1
___2. x is greater than or equal to -1
___3. x is greater than -1
___4. The distance from x to -1 is less than or equal to 1
___5. x is less than or equal to -1

A. $x \geq -1$
B. $-1 < x$
C. $x \leq -1$
D. $|x+1| \leq 1$
E. $|x+1| > 1$

For this problem WeBWorK only tells you that all your answers are correct or that at least one is wrong. This makes the problem

harder and is usually used only for T/F and matching questions. The idea is encourage you think rather than to just try guessing.

If you are having trouble reading the mathematics on the screen, this means that you are using "text" mode. If you are using Netscape or MSIE then you can get an easier to read version of the equations by returning to the problem list page (use the button at the top of this page) and choosing "formatted-text" or "typeset" instead of "text". Sometimes there is a 15-20 second delay in viewing a problem in "typeset" mode the first time.

6.(1 pt) This problem demonstrates a WeBWorK problem involving graphics.

The simplest functions are the linear (or affine) functions — the functions whose graphs are a straight line. They are important because many functions (the so-called differentiable functions) "locally" look like straight lines. ("locally" means that if we zoom in and look at the function at very powerful magnification it will look like a straight line.)

Enter the letter of the graph of the function which corresponds to each statement.

___1. The graph of the line is increasing
___2. The graph of the line is decreasing
___3. The graph of the line is constant
___4. The graph of the line is not the graph of a function

| A | B | C | D |
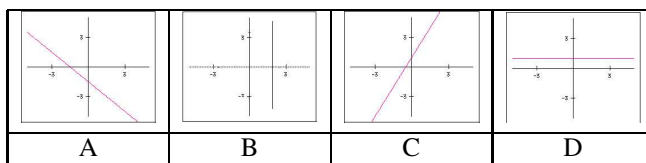
This is another problem where you aren't told if some of your answers are right. (With matching questions and true false questions, this is the standard behavior – otherwise it is too easy to guess your way to the answer without learning anything.)

If you are having a hard time seeing the picture clearly, click on the picture. It will expand to a larger picture on its own page so that you can inspect it more closely.

Some problems display a link to a web page where you can get additional information or a hint:**Hint**

7.(1 pt) This problem demonstrates a WeBWorK question that requires you to enter a number or a fraction.

Evaluate the expression $\frac{|194-326|}{|-7|}$. Give you answer in decimal notation correct to three decimal places or give your answer as a fraction.

Now that you have finished you can use the "Prob. List" button at the top of the page to return to the problem list page. You'll see that the problems you have done have been labeled as correct or incorrect, so you can go back and do problems you skipped or couldn't get right the first time. Once you have done a problem correctly it is ALWAYS listed as correct even if you go back and do it incorrectly later. This means you can use WeBWorK to review course material without any danger of changing your grade.