Some Interface Issues

- Maple 10 can be somewhat slow to open, but once it's ready, it's an incredibly powerful and very cool tool.

  There are two different interfaces for Maple. I think it's clearest to use the Worksheet Mode, which is the default on the machines in room A102. The mode can be changed under the menu option

  Tools – **Options** – **Interface** on Windows machines, or
  Maple 10 – **Preferences** – **Interface** on Mac OS machines

- The palettes on the left can be very handy for providing templates for Maple's syntax.

  The **Expression** and **Common Symbols** palettes will be especially useful for Calculus.

- The **Help** menu is your friend. Use it to find the exact syntax and options for the commands.

  The **Help** – **Quick Reference** option is also worth exploring.

- There are a few things about Maple's syntax that might drive you crazy:
  - Every line must end with a semi-colon.
  - Always include the `*` for multiplication, like `3*(x+y)` for $3(x + y)$.
  - Maple is case-sensitive: `plot` is **not** the same as `Plot`.

- There are also a couple tricks that will make your life much easier:
  - Maple recognizes `%` as the output from the last statement. This can save you quite a bit of time since you don't have to retype the previous expression.
  - You can also access the output from any statement by pressing `<cntrl>-L` in Windows or `<cmd>-L` on a Mac.

- If you've never used Maple before, don't get overwhelmed or discouraged. It's a remarkable tool that will help you explore and learn mathematics more deeply.

Some of the Commands You'll Need for this Semester

`plot(sin(x), x=-2..Pi);`	Plots $\sin(x)$ for $-2 \leq x \leq \pi$
`plot([x^2, sin(x)], x=-2..Pi);`	Plots the two functions x^2 and $\sin(x)$ for$-2 \leq x \leq \pi$ on the same set of axes
`sqrt(42+x)`	Just as you expect, this is $\sqrt{42+x}$
`Pi`	The constant π. Notice the *capital P*
`exp(x)`	The natural exponential function e^x To get the constant e, you use `exp(1)`
`simplify( );`	Attempts to algebraically simplify an expression
`solve(x^2+6x-5=0);`	Tries to solve the equation *exactly* without decimal approximation
`Diff(cos(x^2)*tan(x), x);`	The inert form of the differentiation function.
`Int(cos(x^2)*x^2, x);`	The inert form of the antidifferentiation function. The advantage of the inert form is that you can check if you have entered the expression correctly.
`value( );`	The *exact* value of an expression. You can combine this with the `Diff( )` or `Int( )` commands to find a value.
`evalf( );`	A numeric approximation of a value
`w := x^2;`	Defines w to be the expression x^2 Whenever Maple sees `w`, it will substitute x^2
`f := x -> x^3 + cos(x);`	Defines a *function* $f(x) = x^3 + \cos(x)$ Then $f(Pi)$ would be $\pi^3 + \cos(\pi)$
`unassign('w');`	Unassigns w
`restart;`	Clears all definitions and reinitializes Maple
`with(student);`	Loads the `student` calculus package which is needed for the commands `leftsum( )` `rightsum( )`, `middlesum( )`, `leftbox( )`, `rightbox( )`, and `middlebox( )`.
`leftbox( cos(x^2), x=-1..2, 20);`	Shows a graph of L_{20}, the left sum with 20 subdivisions, for the integral $\int_{-1}^{2} \cos(x^2)\, dx$.
`leftsum( cos(x^2), x=-1..2, 100);`	Computes L_{100} for $\int_{-1}^{2} \cos(x^2)\, dx$. You will need to use `value(%);` or `evalf(%);` to get the value.
`with(plots);`	Loads the plots package which is need for the rest of the commands in this section
`polarplot(cos(2*theta), theta=0..2*Pi);`	Plots the polar curve $r = \cos(2\theta)$ for $0 \leq \theta \leq 2\pi$
`p1:=plot( ); p2:=plot( ); display(p1,p2);`	Allows you to display multiple plot structures on the same set of axes
`tubeplot([x,0,0], x=0..4*Pi, radius=sin(x)+2);`	This will draw the surface obtained by rotating the graph of $y = \sin(x) + 2$ about the x-axis from $x = 0$ to $x = 4\pi$.