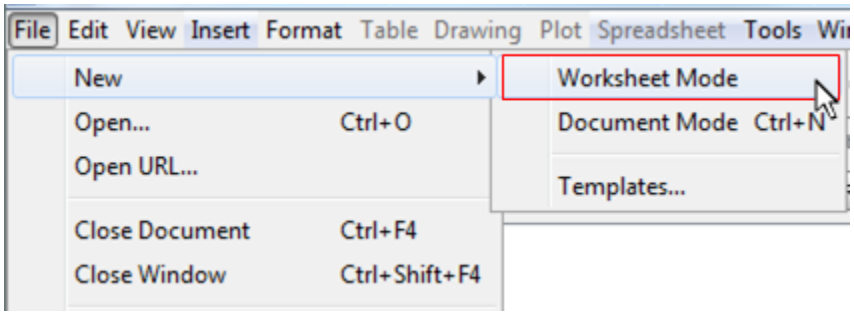
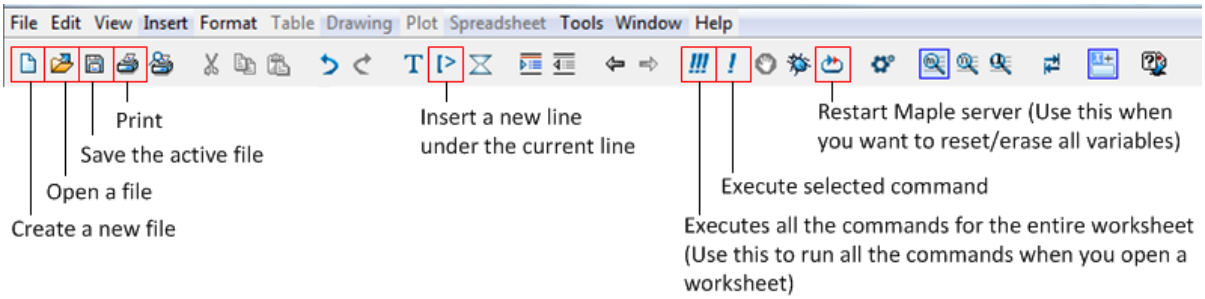
Maple Tip Sheet

Start Up

When getting familiar with Maple, it is best to start off with Worksheet Mode:



Common Toolbar Commands



General Information

- Maple is much like Microsoft Word in terms of equation input. Use the following characters to denote each operation: multiplication (*), division and fractions (/), exponents (^), and subscripts (_).
- Maple is also case sensitive; make sure to watch out for capitalization (ex. the variables *mapleVariable* and *Maplevariable* will be different and the commands *limit()* and *Limit()* will show different things.)
- Most Maple input requires you to end in a semicolon (;). So it is best to get into the habit.
- Comments can be added to code via the pound sign (#).
- Maple Worksheets can be saved and run later.

For more information or to book an appointment

Call: 905.721.8668 ext. 6578
Email: studentlearning@ontariotechu.ca
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North location: Shawenjigewining Hall
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Basic Math

`>restart;`		*#Clears variables from memory*
`>1234 + 4567;`	5801	*#You can use Maple as you would a regular calculator*
`>5·6·9/3;`	90	
`>%;`	90	*#Recalls the answer from the previous line*
`>%/9;`	10	
`>(1 + 2)(1 + 2);`	3	*#Do not forget the multiplication sign or erroneous answers will appear*
`>(1 + 2)·(1 + 2);`	9	*#The correct way to write the above equation*
`>2/3;`	$\frac{2}{3}$	*#Fractions will appear as fractions*
`>evalf(2/3);`	0.6666666667	*#Evaluates the fraction as a floating point number*
`>Pi;`	π	
`>evalf(Pi);`	3.141592654	*#Evaluates Pi as a floating point number*
`>Pi;`	π	
`>evalf(%);`	3.141592654	*#% recalls the answer from the previous line*
`>exp(1);`	e	*#Euler's number*
`>evalf(%);`	2.718281828	*#% recalls the answer from the previous line*
`>sqrt(144);`	12	*#Computes the square root of 144*

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Simple Expressions and Variables

>$Area := \mathrm{Pi}\cdot r^2;$	$Area := \pi r^2$	#Defines the Area of a circle
>$r := 10;$	$r := 10$	#Assigns 10 to the variable 'r'
>$Area;$	$100\,\pi$	#Computes the Area of a circle
>$evalf(Area);$	314.1592654	#Evaluates the Area as a floating point number
> $r := 5;$	$r := 5$	#Assigns 5 to the variable 'r'
>$Area;$	$25\,\pi$	#Computes the Area of a circle with the new 'r' value
>$evalf(Area);$	78.53981635	#Evaluates the Area as a floating point number
>$Area := 'Area';$	$Area := Area$	#Clears data from the 'Area' variable
>$Area;$	$Area$	#Displays the Area variable

Advanced Expressions

Defining

>$y := 2\cdot x^3 + 5\cdot x^2;$	$y := 2\,x^3 + 5\,x^2$	#Defines the expression $y=2\cdot x^3 + 5\,x^2$

Solving

>$subs(x = 4, y);$	208	#Substitutes x=4 and solves for y
>$solve(y = 208);$	$4, -\frac{13}{4} - \frac{1}{4}\cdot I\sqrt{247}, -\frac{13}{4} + \frac{1}{4}\cdot I\sqrt{247}$	#Solves for x when y=208

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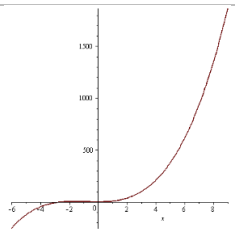
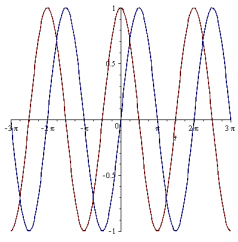
>$fsolve(y=208);$	4.	#Solves for x when y=208 #Uses floating point arithmetic
Differentiating and Integrating		
>$diff(y,x);$	$6x^2+10x$	#Differentiates y with respect to x
>$diff(y,x,x);$	$12x+10$	#Second derivative of y with respect to x
>$subs(x=4,diff(y,x));$	136	#Value of the first derivative of y with respect to x when x=4
>$int(y,x);$	$\frac{1}{2}x^4+\frac{5}{3}x^3$	#Integrates y with respect to x
>$integrate(y,x=0..6);$	1008	#Integrates y with respect to x from x=0 to x=6
Plotting		
>$plot(y,x=-6..9);$		#Plots y vs. x (for a range from -6 to 9)
>$g := \sin(t);$	$g := \sin(t)$	#Defines the expression $g = sin(t)$
>$h := \cos(t);$	$h := \cos(t)$	#Defines the expression $h = cos(t)$
>$plot(\{g,h\}, t=-3\cdot Pi..3\cdot Pi);$		#Plots the expressions, g and h, vs. t (for a range of t=-3Pi to 3Pi)

Limits		
> $limit(g, t=0);$	0	#The limit of g as t approaches 0

Functions

Defining		
>$f := x \to 2 \cdot x^3 + 5 \cdot x^2;$	$f := x \to 2\,x^3 + 5\,x^2$	#Defines the function $f(x) = 2 \cdot x^3 + 5 \cdot x^2$
Solving		
>$f(4);$	208	#Solves f(4)
>$solve(f(x) = 208);$	$4, -\frac{13}{4} - \frac{1}{4} \cdot I\sqrt{247}, -\frac{13}{4} + \frac{1}{4} \cdot I\sqrt{247}$	#Solves for x when f(x)=208 #f(x) acts like an expression here
>$fsolve(f(x) = 208);$	4.	#Solves for x when f(x)=208 #Uses floating point arithmetic
Differentiating and Integrating		
>$D(f)$	$x \to 6\,x^2 + 10\,x$	#First derivative of f(x)
>$D(D(f))$	$x \to 12\,x + 10$	#Second derivative of f(x)
>$D(f)(4);$	136	#Value of the first derivative of f(x) when x=4
>$int(f(x), x);$	$\frac{1}{2}\,x^4 + \frac{5}{3}\,x^3$	#Integrates f(x) with respect to x #f(x) acts like an expression here
>$int(f(x), x = 0..6);$	1008	#Integrates f(x) with respect to x from x=0 to x=6

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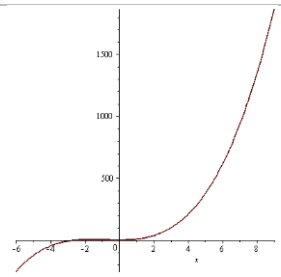
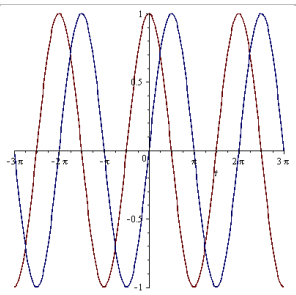
Plotting		
`>plot(f,-6..9);`		*#Plots f(x) vs. t (for a range of x from -6 to 9)*
`>i := t→sin(t);`	$i := t \to \sin(t)$	*#Defines the function i(t) = sin(t)*
`>j := t→cos(t);`	$j := t \to \cos(t)$	*#Defines the function j(t) = cos(t)*
`>plot([i,j], -3·Pi..3·Pi);`		*#Plots the function, i and j, vs. t (for a range of t=-3Pi to 3Pi)*
Limits		
`>limit(i(t), t=0);`	0	*#The limit of i(t) as t approaches 0*

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