A Brief Maple 14 Cheat Sheet

Basic Interface Elements

- There are two different interfaces for Maple. I think it's clearest to use the Document Mode. Probably the easiest way to do this is to go to File – New – Document Mode.

- The palettes on the left can be very handy for providing templates for Maple's syntax. In particular, the Expression and Common Symbols palettes will be especially useful for Calculus.

- You will find that it is easier to enter some expressions on the keyboard rather than use the palettes. A few handy ones are:

  Pi for π
  exp(x) for e^x
  sqrt(x) for $\sqrt{x}$

  Be aware that Maple is case-sensitive: pi is *not* the same thing as Pi.

Contextual Menus, Tutors, and Entering Commands

- The contextual menus provide access to many of the capabilities of Maple. If you right-click on an expression, Maple will give you the options to:

  Differentiate
  Integrate
  Plots – Plot Builder will give you the option for plotting the expression
  Evaluate at a point
  Approximate, and many others

- There are several utilities under the Tools – Tutors menus that provide a nice interface to the Maple commands. You will want to pay special attention to those under

  Tools – Tutors – Calculus–Multivariable
  Tools – Tutors – Calculus–Single Variable.

- You will soon find that it is more convenient to type in some commands rather than using the contextual menus or tutors. The next page gives the syntax for most of the commands that you will use during the semester.

- The Help menu is your friend. Use it to find the exact syntax and options for any command. The Help – Quick Reference option is also worth exploring.

Basic Plots – Be sure to check the options for these commands

plot(sin(x), x=-2..Pi)	Plots $\sin(x)$ for $-2 \le x \le \pi$
plot([x^ 2, sin(x)], x=-2..Pi)	Plots the two functions x^2 and $\sin(x)$ for $-2 \le x \le \pi$ on the same set of axes
plot([cos(t), sin(t), t=0..Pi])	Plots the parametric curve $(\cos(t), \sin(t))$ for $0 \le t \le \pi$ Notice that t is *inside* the square braces.
plot3d(sin(x)*cos(y), x=-3..3, y=0..5);	A 3-D plot of $z = \sin(x)\cos(y)$. You can also use the options coords=cylindrical and coords=spherical to plot in other coordinate systems.

The Plots Package – Load using Tools – Load Package – Plots

polarplot(sin(2*theta), theta=0..2*Pi)	
contourplot(x^ 2-y^ 2, x=-5..5, y=-5..5)	You might want to use the filled=true and/or coloring=[blue,red] options.
densityplot(x^ 2-y^ 2, x=-5..5, y=-5..5)	I often like to sue the options colorstyle=HUE, style=PATCHNOGRID, and grid=[100,100], although you'll want to be careful with how large you make the grid.
fieldplot([x-y,2*x], x=-5..5, y=-5..5)	The grid=[10,10] option will determine how many vectors are graphed.
gradplot(x^ 2-y^ 2, x=-5..5, y=-5..5)	
spacecurve([sin(t),cos(t),t], t=0..20)	Plots a parametric curve in 3-D
implicitplot(x^ 2/4 + y^ 2=1, x=-5..5, y=-2..2)	A 2-D implicit plot. Notice that you must give bounds for both x and y
implicitplot3d(x^ 2/4 + y^ 2+z^ 2/9=1, x=-2..2, y=-1..1, z=-3..3)	A 3-D implicit plot
p1:=plot3d(12-x^ 2-y^ 2, x=-3..3, y=-3..3)	
p2:=plot3d(x+y+3,x=-3..3,y=-3..3)	
display(p1,p2)	Allows you to display multiple plot structures on the same set of axes.

The LinearAlgebra Package – Load using Tools – Load Package – Linear Algebra

DotProduct($< 1, 2, 3 >, < 4, 5, 6 >$)

CrossProduct$< 1, 2, 3 >, < 4, 5, 6 >$)