Calculus	Syntax	Uses
1. **Arc Length**	arclength(Position Vector, Variable, Lower, Upper)	Determines the arc length of a parametric equation.
2. **Bound Volume**	boundvol(Function 1, Function 2, Variable)	Determines the volume of the solid of revolution formed by the region bound between two curves.
3. **Bound Volume (Restricted Domain)**	boundvold(Function 1, Function 2, Variable, Lower Bound, Upper Bound)	Determines the volume between the solids of revolution formed by the two functions on a restricted domain.
4. **Euler's Method**	eulers(Differential equation, Independent variable, x0, xn, y0, step-size)	Uses euler's method to estimate the solution to a differential equation.
5. **Mixing Problems**	mix()	No inputs are required just press enter to start, program will ask you for inputs instead. Determines the Differential equation for mixing problems.
6. **Rational Function**	rational(numerator, denominator, variable)	Determines the holes, straight line asymptotes, and oblique asymptotes of the inputted rational function.
7. **Surface area of a solid**	**A function in terms of the axes of rotation:** surfarea(Function, Variable, Lower, Upper) **A parametric vector:** surfarea(Position Vector, Variable, Lower, Upper) **A function but NOT in terms of the axes of rotation** surfarea(Function (in terms of x), y, lower, upper)	Determines the surface area of the solid formed when rotating a function about an axes

Complex Numbers	Syntax	Uses
1. De Moivre's Theorem	demoiv(Power, Number)	Solves the equations $z^{power} = number$
2. Circle locus first form	locicir1(Point , Radius)	Determines cartesian equation of circle in the form: $\|z - a\| = r$
3. Circle locus second form	locicir2(Point 1, Point 2, k)	Determines cartesian equation of circle in the form: $\|z - a\| = k\|z - b\|$
4. Ellipse locus	lociellp(Point 1, Point 2, Length)	Determines cartesian equation of ellipse in the form: $\|z - a\| + \|z - b\| = k$
5. Hyperbola locus	locihyp(Point 1, Point 2, Length)	Determines cartesian equation of hyperbola in the form: $\|z - a\| - \|z - b\| = k$
6. Line Locus	lociline(Point 1, Point 2)	Determines cartesian equation of line in the form: $\|z - a\| = \|z - b\|$
7. Quadratic Roots	quadroots(Number)	Determines the quadratic roots of a complex number algebraically
8. Ray	ray(Point, Angle)	Determines cartesian equation of ray

Linear Algebra	Syntax	Uses
1. **Line Cartesian to Vector**	car2vecline(line Cartesian)	Converts equation of line from cartesian form to vector form
2. **Plane Cartesian to Vector**	car2vecplane(Plane Cartesian)	Converts equation of plane from cartesian form to vector form
3. **Line Vector to Cartesian**	vec2carline(line Vector)	Converts equation of line from vector form to cartesian form
4. **Plane Vector to Cartesian**	vec2carplane(Plane Vector)	Converts equation of plane from vector form to cartesian form
5. **Minimum Distance between 2 lines**	dist2l(Line Vector 1, Line Vector 2)	Determines minimum distance between two lines
6. **Minimum Distance between 2 planes**	dist2pl(Plane Cartesian 1, Plane Cartesian 2)	Determines minimum distance between two planes
7. **Minimum Distance between line and plane**	distlpl(Line Vector, Plane Cartesian)	Determines the minimum distance between a plane and line
8. **Minimum Distance between line and point**	distlp(Line Vector, Point)	Determines minimum distance between a line and point
9. **Minimum Distance between plane and point**	distlp(Plane Equation, Point)	Determines minimum distance between a plane and point
10. **Intersection between 2 lines**	ints2l(Line Vector 1, Line Vector 2)	Determines the point of **intersection** & **angle** between two lines
11. **Intersection between 2 planes**	ints2pl(Plane Cartesian 1, Plane Cartesian 2)	Determines the line of **intersection** & **angle** between two planes
12. **Intersection between plane and line**	intslpl(Line Vector, Plane Cartesian)	Determines the point of **intersection** & **angle** between line and plane
13. **Create line with 2 points**	line2p(Point 1, Point 2)	Determines the equation of a line given two points
14. **Create line with direction vector and point**	linedp(Direction Vector, Point)	Determines the equation of a line given a direction vector and point
15. **Create plane with 3 points**	plane3p(Point 1, Point 2, Point 3)	Determines the equation of a plane given three points
16. **Create plane with normal and point**	planenp(Normal Vector, Point)	Determines the equation of a plane given a normal vector and a point
17. **Plane formed by intersecting lines**	planeintl(Line Vector 1, Line Vector 2)	Determines the equation of the plane formed by two intersecting lines

Vectors	Syntax	Uses
1. **Unit Vector Bisector**	bisec(vector 1, vector 2)	Determines the unit vector which bisects the angle between two vectors
2. **Colinear**	colin(Point 1, Point 2, Point 3)	Determines value(s) of a variable required for points to be collinear
3. **Linear Dependence**	lindep(Vector 1, Vector 2, Vector 3)	Determines value(s) of a variable required for 3 vectors to be linearly dependent
4. **Vector Projection**	vproj(Vector 1, Vector 2)	Determines vector, scalar resolute, & angle for two inputted vectors
5. **Angle between Two Vectors**	vecang(Vector 1, Vector 2)	Determines the angle between two inputted vectors.

Kinematics	Syntax	Uses
1. **Collision Detector**	collision(Position Vector 1, Position Vector 2)	Determines whether two particles collide and the points at which their paths intersect.
2. **Projectile Motion**	projm(Initial Position, Initial Velocity, Angle of launch to horizontal (in degrees), Initial Acceleration) For example, Bob throws a ball at **20m/s** at an angle of **30 degrees to the horizontal.** The ball accelerates downwards due to **gravity**. Bob on a **60m** high cliff. for example, projm(60, 20, 30, -49/5)	Determines the maximum height, horizontal displacement, and speed as projectile hits the ground as well as all the acceleration, velocity and position vectors.
3. **suvat**	suvat(s,u,v,a,t)	Give 2 variables and 3 known values, it does the rest.

Probability and Statistics	Syntax	Uses
1. **Sample Mean Confidence interval**	confint(Sample mean, population standard deviation, sample size, . confidence)	Determines confidence interval for sample mean.
2. **Hypothesis testing**	hyptest()	Performs either a one tailed or two tailed hypothesis test. You will be prompted for the inputs.
3. **Error probability**	prerror()	Determines the probability of either a type I or type II error occurring. You'll be prompted for the inputs.
4. **P-value**	pval(sample mean, population mean, population standard deviation, sample size)	Determines p-values of both one and two tailed tests.