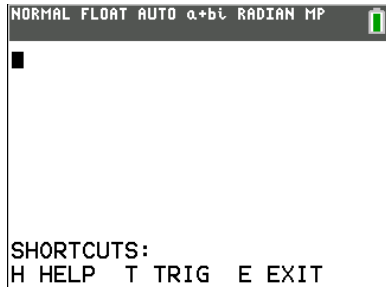


ELITE Math CE (Ultimate Algebra Program)

ELITE MATH CE is a unique program that has many built-in math functions. It has a built-in conic, quadratic, cubic, and numeric solver. It even solves linear systems, distance, midpoint, slope, point-slope, and many more. Simplifies radicals, pi, fractions, and complex numbers. Works on the TI-84 Plus CE and TI-84 Plus CE Python calculators. Requires OS 5.3 or higher.

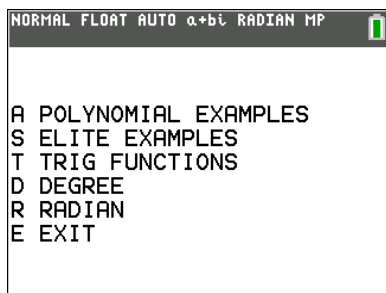


The home screen of ELITE

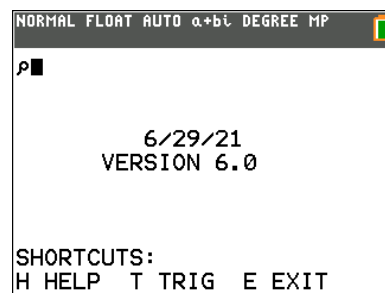
Single letter commands:

- A** polynomial examples
- S** elite examples
- R** for radians
- D** for degrees
- M** to check program version
- H** for helpful hints
- T** for trig functions
- E** to exit

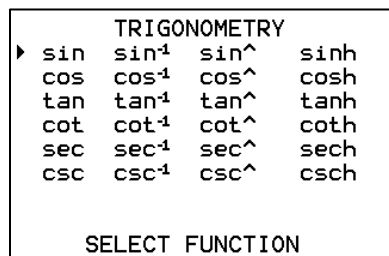
HELPFUL HINTS



PROGRAM VERSION



TRIGONOMETRY FUNCTIONS MENU



SMART ENTRY

ELITE Math interprets the type of the query entry. (*number, list of numbers, points, arithmetic expression, polynomial, inequality or vector.*)

Basic Arithmetic	$\sin(45)$ $\csc(\pi/3)$ $\sqrt{120}$ $410/25$
Polynomials Poly = Poly (Poly) + (Poly) (Poly) - (Poly) (Poly) x (Poly) (Poly) / (Poly) (Poly)^N (Ax + By)^N	$x = 2x + 2x^2$ $x^3 + y^2 + 2x + 3z = 2x - 1$ $(x^2 + 2x + 4) + (x - 3x^2)$ $(z + 2x + y) + (x^2 + 2z + 1)$ $(x - 5)(2x + 4)$ $(x^3 - 1) / (x - 1)$ $(x^2 + 2x + 1)^3$ $(x + 2y)^4$
Linear Systems	$5 = x + y$ $2y + x = 7$ $x + y - z = -2$ $z + 2x - y = 5$ $-x + 2y + 2z = 1$
Inequalities (Linear or Quadratic) Poly < Poly Poly ≤ Poly Poly > Poly Poly ≥ Poly	$2x + 5 < 7$ $3x + 2 > 5$ $5 - 3x \leq 3$ $x^2 - 3x - 4 > 0$ $-2x^2 + 5x + 12 < 0$
Point (#,#) (#,#,#)	(2,4) (5,7,8)
Two Points $(x_1, y_1)(x_2, y_2)$ $(x_1, y_1, z_1)(x_2, y_2, z_2,)$	(4,5)(7,8) (1,2,3)(4,5,6)

SIMPLIFY

PI SIMPLIFIER

$\pi + 3\pi/2$	$\tan^{-1}(\sqrt{3})/3$
$5\pi/2$	$\pi/6$
7.853981634	0.5235987756

RADICAL SIMPLIFIER

$\sqrt{40}$	$\sqrt{-50}$
$2\sqrt{10}$	$5\sqrt{2}i$
6.32455532	7.071067812i
	7.07106790

FRACTION SIMPLIFIER

$24/10$
$2\frac{2}{5}$
$12/5$
2.4

AUTO SIMPLIFY

$[\sqrt{50}]$
$5\sqrt{2}$
7.071067812

ALGEBRA SIMPLIFY ENGINE

COMBINE LIKE TERMS

$$\begin{array}{l} X^2+3X^2+2X-5X+15 \\ 4X^2-3X+15 \\ \hline X^3-Y^5+Z^6+2Y+6 \\ Z^6-Y^5+X^3+2Y+6 \end{array}$$

POLYNOMIAL SUBTRACTION

$$\begin{array}{l} (3X^2+2X+4)-(X^2-9X) \\ 2X^2+11X+4 \end{array}$$

POLYNOMIAL DIVISION

$$\begin{array}{l} P(2X^2+2X+4)/(X-2) \\ \text{QUOTIENT (SLANT ASYMPTOTE)} \\ 2X+6 \\ \text{REMAINDER} \\ 16 \end{array}$$

LINEAR INEQUALITIES

$$\begin{array}{l} 3X+25>2X-12 \\ X>-37 \\ \hline 12X+12\leq X+6 \\ X\leq -6\frac{1}{11} \end{array}$$

LINEAR SYSTEMS (2 VARIABLES)

$$\begin{array}{l} PX+Y=2 \\ X-Y=4 \\ \hline \{3 \ -1\} \\ X:=3 \\ Y:=-1 \end{array}$$

LINEAR SYSTEMS (3 VARIABLES)

$$\begin{array}{l} PX+Y-Z=2 \\ Z+2X-Y=5 \\ -X+2Y+2Z=1 \\ \{2.333333333 \ 0.666666667 \dots \\ X:=7/3 \\ Y:=2/3 \\ Z:=1 \end{array}$$

POLYNOMIAL ADDITION

$$\begin{array}{l} (X^2+3X+4)+(3X^2-7X-6) \\ 4X^2-4X-2 \end{array}$$

POLYNOMIAL MULTIPLY

$$\begin{array}{l} (3X^2-2X)(6X-25) \\ 18X^3-87X^2+50X \end{array}$$

POLYNOMIAL POWER

$$\begin{array}{l} (X^2+2X+4)^3 \\ X^6+6X^5+24X^4+56X^3+96X^2+96X+64 \end{array}$$

QUADRATIC INEQUALITIES

$$\begin{array}{l} X^2<4 \\ -2<X<2 \\ \hline X^2>14 \\ X<-\sqrt{14} \text{ or } X>\sqrt{14} \end{array}$$

$$\begin{array}{l} PX+Y=6 \\ X+Y=2 \\ \hline \text{NO SOLUTIONS} \end{array}$$

DISTANCE BETWEEN LINE AND POINT

5X-7Y=21
(-6,3)

36√(74)⁄37
8.36982999

DISTANCE BETWEEN PLANE AND POINT

X+Y+Z=6
(1,2,4)

√(3)⁄3
0.5773502692

ALGEBRA

SOLVE FOR X

solve(14X+25)
ROOTS:

-25⁄14

solve(X²+2X)
ROOTS:

0
-2

solve(X³-1)
ROOTS:

1
-1⁄2+√(3)⁄2i
-1⁄2-√(3)⁄2i

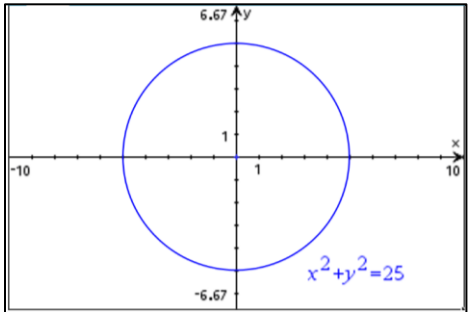
FACTOR

X³-1

FACTOR X³-1

(X-1)(X²+X+1)

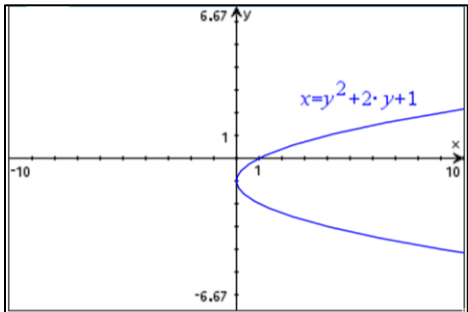
ANALYZE CONICS



$$x^2 + y^2 = 25$$

CIRCLE

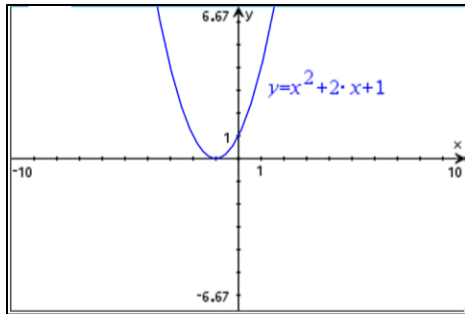
CENTER (0,0)
RADIUS 5
DIAMETER 10
AREA 78.53981634
CIRCUMFERENCE 31.41592654



$$x = y^2 + 2y + 1$$

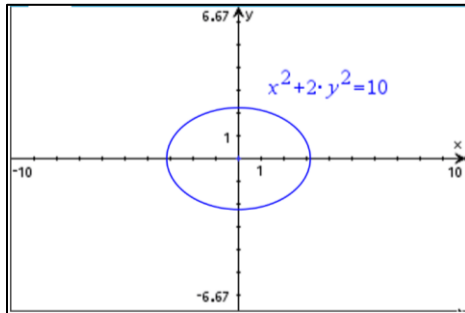
PARABOLA

VERTEX (0,-1)
FOCUS (1⁄4,-1)
DIRECTRIX X=-1⁄4
DISCRIMINANT 0
LATUS RECTUM 1



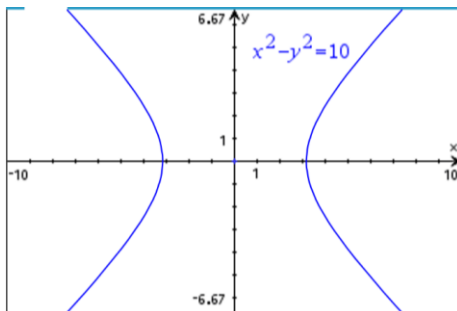
$$y = x^2 + 2x + 1$$

PARABOLA
 VERTEX (-1,0)
 FOCUS (-1,1/4)
 DIRECTRIX $y = -1/4$
 DISCRIMINANT 0
 LATUS RECTUM 1
 Y-INTERCEPT (0,1)
 X-INTERCEPT (-1,0)
 (-1,0)



$$x^2 + 2y^2 = 10$$

ELLIPSE
 FOCI (-2.236067977,0)
 (2.236067977,0)
 VERTICES (-3.16227766,0)
 (3.16227766,0)
 CENTER (0,0)
 SEMI MAJOR 3.16227766
 SEMI MINOR 2.236067977
 AREA 22.21441469
 ECCENTRICITY 0.7071067812
 SUM OF FOCAL RADII 6.32455532



$$x^2 - y^2 = 10$$

HYPERBOLA
 FOCI (-4.472135955,0)
 (4.472135955,0)
 VERTICES (-3.16227766,0)
 (3.16227766,0)
 CENTER (0,0)
 SEMI MAJOR 3.16227766
 SEMI MINOR 3.16227766
 ECCENTRICITY 1.414213562

[PRESS ENTER FOR THE NEXT PAGE]

HYPERBOLA
 DIRECTRIX $x = 2.236067977$
 $x = -2.236067977$
 LATUS RECTUM 6.32455532

CALCULUS

DERIVATIVE

ρX^4+2X^2+2X	X^4+2X^2+2X
$d(X^4+2X^2+2X)$	$4X^3+4X+2$

CRITICAL POINTS

ρX^3-3X^2	
CRITICAL(X^3-3X^2)	
MAX	(0, 0)
MIN	(2, -4)

INFLECTION POINTS

ρX^3-3X^2	
INFLECTION(X^3-3X^2)	
	(1, -2)

INTEGRAL

$\rho 4X^2$	
	$4X^2$
$\int (4X^2)$	$4/3X^3+C$

TANGENT LINE

ρX^2+3X	
	X^2+3X
$\text{tangentLine}(X^2+3X)$	
@X=6	$15X-36$

NORMAL LINE

ρX^2+3X-4	
	X^2+3X-4
$\text{normalLine}(X^2+3X-4)$	
@X=2	$-1/7X+44/7$

RECTANGULAR TO POLAR (X₁,Y₁)

RECT►POLAR (2,3)
√(13)∠56.309932

UNIT VECTOR

(4,7)
UnitV (4,7)
{4√(65)/65 7√(65)/65}

MAGNITUDE

(4,7)
Magnitude (4,7)
√(65)
8.062257748

VECTOR ADDITION

P(1,45)+(2,60)
2.9771972∠55.012765

STATS

p1,3,5	
STATS	
MEAN	3
MEDIAN	3
RANGE	4
STANDARD DEVIATION	2

MEANS

p1,3,5	
MEANS	
ARITHMETIC	3
GEOMETRIC	2.466212074
HARMONIC	1.956521739
QUADRATIC	3.415650255

(#,#)(#,#)

LINES & POINTS $(x_1, y_1)(x_2, y_2)$

Properties of two points.

(1,2)(4,5)

```
      LINES & POINTS
(1,2)(4,5)
Y=1X+1
1X-1Y=-1
DISTANCE 4.242640687
MIDPOINT (2.5,3.5)
SLOPE 1
ANGLE 12.09°
X-INTERCEPT (-1,0)
Y-INTERCEPT (0,1)
```

DISTANCE $(x_1, y_1)(x_2, y_2)$

Calculates the distance between two points.

(3,5)(7,8)

DISTANCE (3,5)(7,8)

5

MIDPOINT $(x_1, y_1)(x_2, y_2)$

Calculates the midpoint of two points.

(3,5)(7,8)

MIDPOINT (3,5)(7,8)

{5 6.5}
X:=5
Y:=13/2

SLOPE $(x_1, y_1)(x_2, y_2)$

Calculates the slope of two points.

(1,2)(4,5)

SLOPE (1,3)(2,8)

5

DOT PRODUCT $\langle x_1, y_1 \rangle \langle x_2, y_2 \rangle$

Calculates the dot product of two vectors.

(1,2)(4,5)

dotP (1,2)(4,5)

14

CROSS PRODUCT $\langle x_1, y_1, z_1 \rangle \langle x_2, y_2, z_2 \rangle$

Calculates the cross product of two vectors.

P(1,3,5)(2,4,6)

crossP (1,3,5)(2,4,6)

[-2 4 -2]

Credit: Anders Tiberg for making FACTOR.

If you find any bugs or want to make suggestions. Contact me @ osias_hernandez@yahoo.com