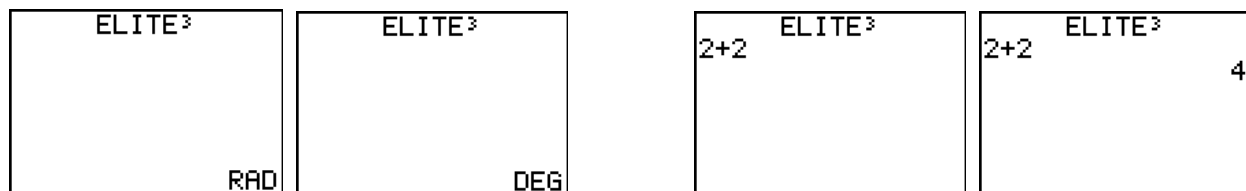


## ELITE Math 3.2

By Osias Hernandez

The first review of my program ELITE: "It's so amazing, powerful and compact! Thank you for creating it, it is simply amazing." – Troy C.

### BASIC

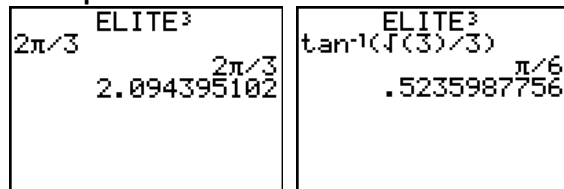


The home screen of ELITE  
 You can change the angle mode from the program.  
 To change to radian type **R**.  
 To change to degrees type **D**  
**E** Exit

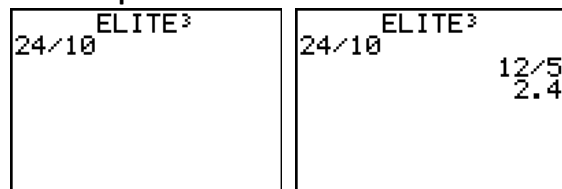
Basic arithmetic calculation  
 Type "**2+2**" press enter.  
**Press "Enter" to return to homescreen**  
**or press "Clear" to exit program.**

### MATH SIMPLIFIER simplify & decimal answer

#### PI Simplifier



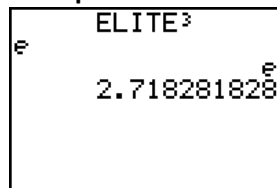
#### Fraction Simplifier



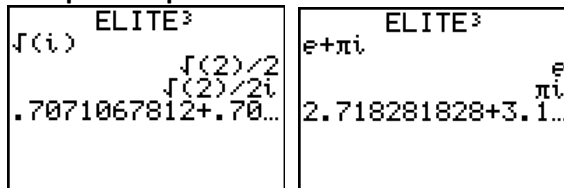
#### Radical Simplifier



#### e Simplifier



#### Complex simplifier



Complex simplifier:  
 First answer is **real**  
 Second answer is **imaginary**  
 Third answer is decimal

## BRACKETS IN ELITE NEW

Brackets can be used on the functions of ELITE Math  
Their useful when your numbers are in radical form.

Ex.

A[1,2,3]

## L1 in ELITE NEW

The only one to stored variable before opening ELITE MATH

Ex.

A(L1)

AL1

**Bases** type B, press enter

<pre>B      ELITE³</pre>	<p>1002<sub>5</sub> to base 10    FACE<sub>16</sub> to the base 4</p> <pre>      BASES NUMBER 1002 FROM BASE 5 TO BASE 10 127</pre>	<pre>      BASES NUMBER FACE FROM BASE 16 TO BASE 4 33223032</pre>	<p>Press "Enter" to return to homescreen press "Clear" to exit program Press "math" to enter a quick calculation</p>
--------------------------	---	--	--

## New

You can add, subtract, multiply, divide, and raise to the power of, numbers in any base 2-20.

FACE<sub>16</sub> + CAFE<sub>16</sub> to the base 16

```
      BASES
NUMBER FACE+CAFE
FROM BASE 16
TO BASE 16
1C5CC
```

32<sub>5</sub> \* 12<sub>5</sub> to the base 10

```
      BASES
NUMBER 32*12
FROM BASE 5
TO BASE 10
119
```

## Recursive

If  $a_1 = 8$ ,  $a_2 = 5$  and  $a_n = a_{n-1} - a_{n-2}$ , then  $a_8 = ?$

<pre>8,5      ELITE³</pre>	<pre>8,5      ELITE³ equ:Ans(1)-Ans( 2) n=8 5</pre>
----------------------------	---

First line is values                      8,5  
Second line is equation                  ans(1)-ans(2)  
Third line is finding the  $a_n$  value      8

### Recursive Syntax

$a_{n-1} = \text{ans}(1)$

$a_{n-2} = \text{ans}(2)$

$2a_{n-1} = 2\text{ans}(1)$

## Sequences

Finding the 9<sup>th</sup> triangular number

<div>ELITE<sup>3</sup></div> <div>T9</div>	<div>ELITE<sup>3</sup></div> <div>TRIANGULAR(9)</div> <div>45</div>
--	---

Finding the 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup>

<div>ELITE<sup>3</sup></div> <div>T4-6</div>	<div>ELITE<sup>3</sup></div> <div>TRIANGULAR(4-6)</div> <div>(10 15 21)</div>
--	---

Finding the 4<sup>th</sup>, 5<sup>th</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> triangular number

<div>ELITE<sup>3</sup></div> <div>T4,5,2,3</div>	<div>ELITE<sup>3</sup></div> <div>TRIANGULAR(4,5,2,3)</div> <div>(10 15 3 6)</div>
--	--

### Sequences Available

Fibonacci **F**  
Hexagonal **H**  
Lucas **L**  
Triangular **T**  
Octagonal **O**

## Algebra

**Midpoint** finding mid-point of (1,4) (3,6)

<div>ELITE<sup>3</sup></div> <div>M1,4,3,6</div>	<div>ELITE<sup>3</sup></div> <div>MIDPOINT(1,4,3,6)</div> <div>(2 5)</div>
--	--

1D	<b>M#,#</b>	<b>M(x1,x2)</b>
2D	<b>M#,#,#,#</b>	<b>M(x1,y1,x2,y2)</b>
3D	<b>M#,#,#,#,#</b>	<b>M(x1,y1,z1,x2,y2,z2)</b>

**Distance** finding distance of (1,2) (3,4)

<div>ELITE<sup>3</sup></div> <div>D1,2,3,4</div>	<div>ELITE<sup>3</sup></div> <div>DISTANCE(1,2,3,4)</div> <div><math>2\sqrt{2}</math></div> <div>2.828427125</div>
--	--

1D	<b>D#,#</b>	<b>D(x1,x2)</b>
2D	<b>D#,#,#,#</b>	<b>D(x1,y1,x2,y2)</b>
3D	<b>D#,#,#,#,#</b>	<b>D(x1,y1,z1,x2,y2,z2)</b>

**Slope** finding slope of (1,2) (3,4)

<div>ELITE<sup>3</sup></div> <div>S1,2,3,4</div>	<div>ELITE<sup>3</sup></div> <div>SLOPE(1,2,3,4)</div> <div>1</div>
--	---

2D	<b>S#,#,#,#</b>	<b>S(x1,y1,x2,y2)</b>
----	-----------------	-----------------------

**Linear Systems 2.0** solves equation using x, y and z variables

<div>ELITE<sup>3</sup></div> <div>X+Y=4</div> <div>X-Y=2</div> <div>(3 1)</div>	<div>ELITE<sup>3</sup></div> <div>X+2Y=10</div> <div>-X+3Z=-23</div> <div>4Y-Z=9</div> <div>(8 1 -5)</div>	<div>ELITE<sup>3</sup></div> <div>X=2Y+Z</div> <div>Y=2Z</div> <div>Z=6</div> <div>(30 12 6)</div>	<div>ELITE<sup>3</sup></div> <div>X+Y=4</div> <div>X+Y=3</div> <div>NO SOLUTIONS</div>
---	--	--	--

### Distance between line and point

```

ELITE³
Y=X+4
(1,3)
√(2)
1.414213562
    
```

```

ELITE³
X+Y=4
(1,2)
√(2)/2
.7071067812
    
```

### Using line in entries

-All entries using a line must be type in this format:

$$\#x + \#y + \#z + \# = \#x + \#y + \#z + \#$$

-And all variables that have a coefficient zero don't have to appear.

-Equal sign is located at [2<sup>nd</sup>][math][1]

### Distance between plane and point

```

ELITE³
X+Y+Z=6
(1,2,4)
√(3)/3
.5773502692
    
```

### Point – Slope new

(x1,y1)M=#

```

ELITE³
(1,1)M=-1/4
    
```

```

POINT-SLOPE
Y=-.25X+1.25
1X+4Y=5
X-INTERCEPT
(5,0)
Y-INTERCEPT
(0,1.25)
    
```

## Analyze

### 2 points to equations

P#,#,#, P(x1,y1,x2,y2)

```

ELITE³
P1,2,3,4
    
```

```

Y=MX+B
M=1
B=1
    
```

### 3 points to equations

P#,#,#,#, P(x1,y1,x2,y2,x3,y3)

```

ELITE³
P2,3,5,6,7,9
    
```

```

AX²+BX+C
A=.1
B=.3
C=2
    
```

Equation stored in y1

### A^B

A and B must be integers

```

ELITE³
2011^2012
    
```

```

ELITE
2011^2012
2.92E6646
UNIT:1
TENS:2
    
```

### Geometric/Harmonic/Quadratic Mean {list}

```

ELITE³
(1,3,5)
    
```

```

MEANSX
GEOMETRICX
2.466212074
HARMONICX
1.956521739
QUADRATICX
3.415650255
    
```

### Lines & Points (#,#)(#,#) (x1,y1)(x2,y2)

ELITE<sup>3</sup>  
(1,5)(4,6)

LINES & POINTS  
(1,5)(4,6)  
Y=.33333333X+4.6666667  
1X-3Y=-14  
DISTANCE 3.1622777  
MIDPOINT (2.5,5.5)  
SLOPE .33333333  
ANGLE 22.38°

ELITE<sup>3</sup>  
(0,4)(0,7)

LINES & POINTS  
(0,4)(0,7)  
X=0  
1X+0Y=0  
DISTANCE 3  
MIDPOINT (0,5.5)  
SLOPE UNDEFINED  
ANGLE 90°

ELITE<sup>3</sup>  
(4,0)(8,0)

LINES & POINTS  
(4,0)(8,0)  
Y=0  
0X+1Y=0  
DISTANCE 4  
MIDPOINT (6,0)  
SLOPE 0  
ANGLE 0°

### Parabola Info #x<sup>2</sup> + #x + #

ELITE<sup>3</sup>  
X<sup>2</sup>+2X+5

PARABOLA  
VERTEX(-1,4)  
FOCUS(-1,4.25)  
DIRECTRIX Y=3.75  
DISCRIMINANT -16  
LATUS RECTUM 1

### Point Rotation (#,#)R# (x1,y1)R#

ELITE<sup>3</sup>  
(1,1)R90

ELITE<sup>3</sup> DEG  
(1,1)R90  
COUNTERCLOCKWISE  
(-1 1)  
CLOCKWISE  
(1 -1)

### Radius R#,#,#

ELITE<sup>3</sup>  
R4,5,6

ELITE<sup>3</sup>  
RADIUS(4,5,6)  
INSCRIBED  
1.322875656  
CIRCUMSCRIBED  
3.023715784

### Area and Type of Triangle A#,#,#

A(Side1,Side2,Side3)

ELITE<sup>3</sup>  
A4,4,4

ELITE<sup>3</sup>  
HERO(4,4,4)  
4J(3)  
6.92820323  
ACUTE  
EQUILATERAL

### Area between Points A#,#,#,#

A(x1,y1,x2,y2)

ELITE<sup>3</sup>  
A4,5,2,3

ELITE<sup>3</sup>  
ANGLE(4,5,2,3)  
4.969740728  
.0867383387

### Area by Vertices (Triangle)

A#,#,#,#,# A(x1,y1,x2,y2,x3,y3)

ELITE<sup>3</sup>  
A0,0,3,0,3,4

ELITE<sup>3</sup>  
ABV(0,0,3,0,3,4)  
6

### Area by Vertices (Quadrilateral)

A#,#,#,#,#,#,# A(x1,y1,x2,y2,x3,y3,x4,y4)

ELITE<sup>3</sup>  
A0,0,3,0,3,3,0,3

ELITE<sup>3</sup>  
AQUADBV(0,0,3,0,3,3,0,3)  
9

### Reference angle

ELITE<sup>3</sup>  
R3π/4  
RAD

ELITE<sup>3</sup>  
REFθ(3π/4)  
π/4  
.7853981634

ELITE<sup>3</sup>  
R7231  
DEG

ELITE<sup>3</sup>  
REFθ(7231)  
31

## Trig Solver sin, cos, tan only Degrees or Radian

Single: only x variable

```

ELITE³
sin(X)=1/2
RAD
    
```

```

TRIG SOLVER
sin(X)=1/2
QUADRANT 1
EXPR X
      π/6
    .5235987756
    
```

```

ELITE³
1/cos(X)=2
RAD
    
```

```

TRIG SOLVER
1/cos(X)=2
QUADRANT 1
EXPR X
      π/3
    1.047197551
    
```

```

ELITE³
sin(X)=√(2)/2
DEG
    
```

```

TRIG SOLVER
sin(X)=√(2)/2
QUADRANT 1
EXPR X
      45
    
```

Double: x, and y variable semi colon to split equations

```

ELITE³
sin(X)=1/2:cos(Y)=1/2
DEG
    
```

```

TRIG SOLVER
sin(X)=1/2:cos(Y)=1/2
QUADRANT 1
EXPR X+Y
      90
    
```

```

ELITE³
sin(X)=1/2:cos(Y)=1/2
RAD
    
```

```

TRIG SOLVER
sin(X)=1/2:cos(Y)=1/2
QUADRANT 1,4
EXPR cos(X+Y)
      √(3)/2
    .8660254038
    
```

## Number Test

```

ELITE³
N125
    
```

```

NUMBER(125)
DIVISORS
      4
FACTORS
    (1 5 25 125)
    
```

# Shortcuts

**B** Bases

**D** Degree Mode

**E** Exit

**R** Radian Mode

**S** Solver Menu

**V** Vectors

**Project ELITE started on May 14, 2011**

**Project ELITE (84 +) first appeared in ticalc.org May 29, 2012**

**ELITE MATH 3.0 (84 CSE) first appeared in ticalc.org in May, 2013**

If program are deleted by ram clear:

[2<sup>nd</sup>][+][8][right]

Scroll down to ELITE3

Press enter

Credit:

Anders Tiberg for making the simplifying engine of ELITE. (pi, e and radicals)

-Factoring program