

# Programming the TI-83/84 Plus. QUAD

Note Title

2014-08-05

## The Quadratic Formula

Recall:  $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

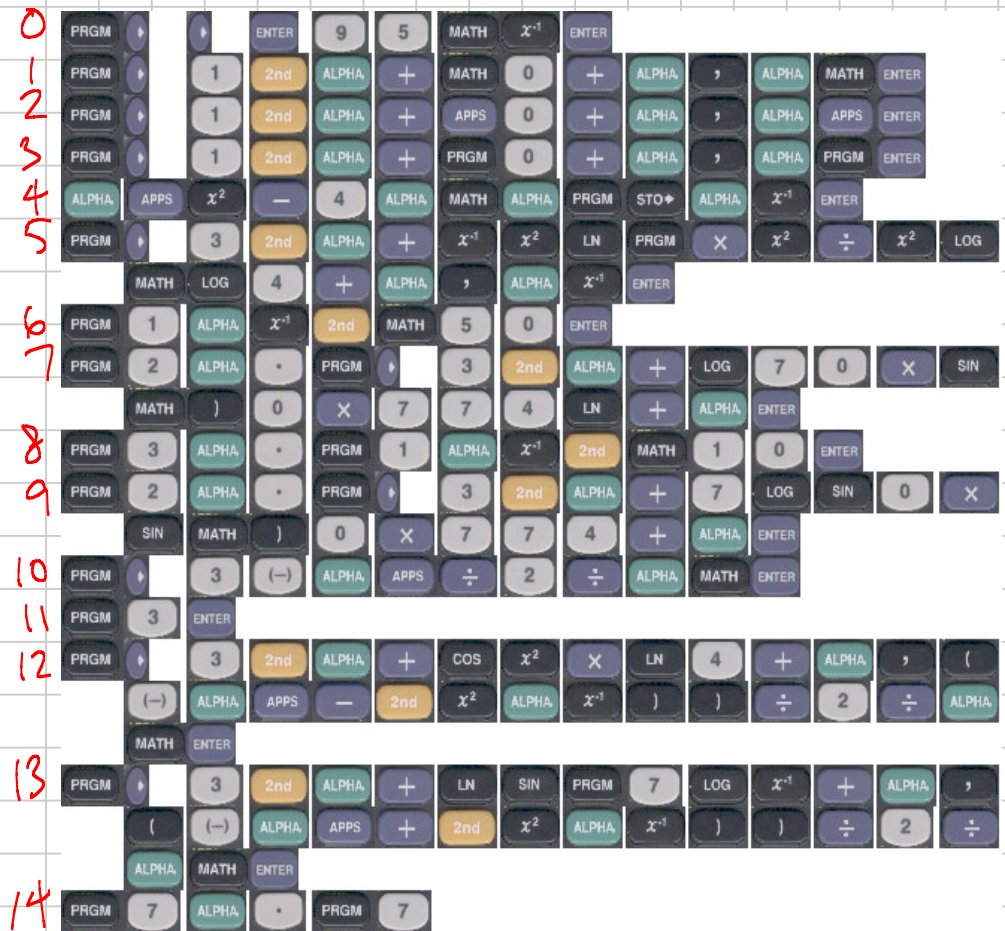
discriminant  $\equiv b^2 - 4ac$

$< 0$  no real roots

$= 0$  one real root

$> 0$  two real roots

```
0 PROGRAM:QUAD
1 :Input "A ",A
2 :Input "B ",B
3 :Input "C ",C
4 :B^2-4AC→D
5 :Disp "DISCRIMINANT",D
6 :If D<0
7 :Then:Disp "NO REAL ROOTS"
8 :Else:If D=0
9 :Then:Disp "ONE REAL ROOT"
10 :Disp -B/2/A
11 :Else
12 :Disp "FIRST",(-B-√(D))/2/A
13 :Disp "SECOND",(-B+√(D))/2/A
14 :End:End
```



Test the following values to make sure everything is entered correctly.

```
PRGMQUAD
A 1
B 2
C 3
DISCRIMINANT      -8
NO REAL ROOTS
Done
```

```
PRGMQUAD
A 1
B 2
C 1
DISCRIMINANT      0
ONE REAL ROOT     -1
Done
```

```
PRGMQUAD
A 1
B 2
C 0
DISCRIMINANT      4
FIRST              -2
SECOND             0
Done
```