

# If the IRS had discovered the quadratic formula ...

Daniel J. Velleman, Dept. of Mathematics, Amherst College

## Who Can Use Form QF?

You can use Form QF if all of the following apply.

- You need to solve an equation of the form  $Ax^2 + Bx + C = 0$ .
- $A$  is not equal to zero.

## Form QF

1 Enter $A$ here. If line 1 is zero, stop. You cannot use Form QF ...	1	
2 Enter $B$ here .....	2	
3 Enter $C$ here.....	3	
4a Do you have evidence to support your values of $A$ , $B$ , and $C$ ?.....		<input type="checkbox"/> Yes <input type="checkbox"/> No
b If "Yes," is the evidence written? .....		<input type="checkbox"/> Yes <input type="checkbox"/> No
5 Multiply line 1 by 2.....	5	
6 Divide line 2 by line 5.....	6	
7 Multiply line 6 by $-1$ .....	7	
8 Multiply line 3 by line 5 .....	8	
9 Amount from line 2.....	9	
10 Multiply line 2 by line 9 .....	10	
11 Multiply line 8 by 2.....	11	
12 Subtract line 11 from line 10. If line 11 is more than line 10, leave blank and fill out Negative Discriminant Worksheet .....	12	
13 If amount on line 12 is zero, enter amount from line 7 on line 15, write "Dbl Rt" in space to left of line 15, and leave line 16 blank. Otherwise, take square root of amount on line 12. Check if square root is from: a <input type="checkbox"/> Square root tables    b <input type="checkbox"/> Calculator .....	13	
14 Divide line 13 by line 5 .....	14	
15 Root 1: Add lines 7 and 14 .....	15	
16 Root 2: Subtract line 14 from line 7.....	16	

## Negative Discriminant Worksheet

1 Amount from Form QF line 5.....	1	
2 Amount from Form QF line 7.....	2	
3 Amount from Form QF line 11.....	3	
4 Amount from Form QF line 10.....	4	
5 Subtract line 4 from line 3 .....	5	
6 Take square root of line 5. Check if square root is from: a <input type="checkbox"/> Square root tables    b <input type="checkbox"/> Calculator .....	6	
7 Divide line 6 by line 1.....	7	
8 Write amount from line 2, a plus sign, amount from line 7, and the letter "i". Enter here and on Form QF line 15.....	8	
9 Write amount from line 2, a minus sign, amount from line 7, and the letter "i". Enter here and on Form QF line 16.....	9	