

# Solving Quadratic Equations by QUADRATIC FORMULA

**Step 1: Is my equation in the right form?**  
Look at your equation...  
  
...is it set equal to zero?  
  
©Audrey Stroh (Math by the Mountain), 2017

**YES**

**NO**

**Step 2: Find the necessary values.**  
What is  $a$ , the coefficient of the  $x^2$  term?  
What is  $b$ , the coefficient of the  $x$  term?  
What is  $c$ , the constant term?  
  
 $a = \underline{\quad}$   $b = \underline{\quad}$   $c = \underline{\quad}$

Rewrite your equation so it is equal to zero.

**Step 3: Plug it in!**  
Plug each value into the quadratic formula:  
  
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
  
  
$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(\quad)(\quad)}}{2(\quad)}$$

**Step 4: Tidy up!**

- Simplify any double negative signs.
- Calculate the *discriminant*, the  $b^2 - 4ac$  value inside of the root.
- Simplify the denominator,  $2a$ .
- Rewrite the equation.

**Step 6: Do the  $\pm$**   
Calculate the two versions of the numerator by doing the  $\pm$ .

**Step 5: Simplify the Root**

- Simplify the root by finding the largest perfect square that goes into the discriminant.
- Rewrite the equation with the simplified root (if it can be simplified!)

**Step 7: Simplify**  
Simplify your answer(s), if you can.