Objective: Solve quadratic equations by using the quadratic formula.
Use the discriminant to determine the number and type of roots of a quadratic equation.

Quadratic Formula:
Solutions to equations of the form \( ax^2 + bx + c = 0 \) are given by ________________________________.

Solve by using the quadratic formula.

1) \( x^2 - 8x = 33 \)  
2) \( 4x^2 - 12x + 9 = 0 \)  
3) \( x^2 - 6x + 2 = 0 \)  
4) \( x^2 + 13 = 6x \)
**Discriminant:**

Depending on the value of $b^2 - 4ac$, different types of solutions are found.

The value of $b^2 - 4ac$ is called the _________________.

<table>
<thead>
<tr>
<th>Value of $b^2 - 4ac$</th>
<th>Number of Type of Roots</th>
<th>Related Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Perfect Square</td>
<td></td>
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<tr>
<td>Positive Non-Perfect Square</td>
<td></td>
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<tr>
<td>Zero</td>
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<tr>
<td>Negative</td>
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</tbody>
</table>

Find the value of the discriminant to describe the number and type of roots. Then find the roots.

5) $x^2 + 3x + 5 = 0$

6) $x^2 - 11x + 10 = 0$