

COMPEX NUMBERS

Agenda:

Objective:

REVIEW:

Solve quadratic equations using complex numbers

REVIEW:

Use the discriminant to determine the nature of the solutions to a quadratic equation

- 1) Take out HW to be Checked
- 2) DO NOW- MAZE!
- 3) **Solve for Roots using Discriminant**
 - together
 - in groups

HW: Finish Solving for Roots using Discriminant worksheets

Solve a Complex Adding Maze

Rules: Start in the red box. You may move horizontally or vertically (but not diagonally). As you traverse through the maze, continue adding the new box value to your total. The object is to find a path through the maze that will give a total of $4 - i$ as you reach the blue box. The total immediately preceding the blue box needs to be $4 - i$.

	$6 + 2i$	$2 + 3i$	$1 + i$
$2 + i$	$-4 - 2i$	$-7 - 6i$	$4 - i$
$1 - 4i$	$9 + 6i$	$8 + 3i$	

Solve for Roots using Discriminant

1) Given the following equations: $3x^2 + 7x = -2$

a) Write the equation in the form $ax^2 + bx + c = 0$.	b) Find the discriminant: $(b^2 - 4ac)$				
c) Use discriminant to describe the nature of the roots of the equation. <table border="1" data-bbox="142 762 678 840"><tr><td>2 rational roots</td><td>2 irrational roots</td></tr><tr><td>1 rational root</td><td>2 imaginary roots</td></tr></table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	d) Complete the quadratic formula to find the solutions.
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

Solve for Roots using Discriminant #1

2) Given the following equations: $x^2 - 2x = 2x - 2$

<p>a) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>b) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>c) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px;">2 rational roots</td> <td style="padding: 2px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px;">1 rational root</td> <td style="padding: 2px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>d) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

3) Given the following equations: $x^2 = 14x - 58$

<p>e) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>f) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>g) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px;">2 rational roots</td> <td style="padding: 2px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px;">1 rational root</td> <td style="padding: 2px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>h) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

Solve for Roots using Discriminant #2

4) Given the following equations: $x^2 - 8x + 12 = 0$

<p>e) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>f) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>g) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px;">2 rational roots</td> <td style="padding: 2px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px;">1 rational root</td> <td style="padding: 2px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>h) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

5) Given the following equations: $3x^2 + x = 10$

<p>i) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>j) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>k) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px;">2 rational roots</td> <td style="padding: 2px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px;">1 rational root</td> <td style="padding: 2px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>l) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

Solve for Roots using Discriminant #3

6) Given the following equations: $x^2 + 25x = 10x$

<p>i) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>j) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>k) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">2 rational roots</td> <td style="padding: 2px 5px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px 5px;">1 rational root</td> <td style="padding: 2px 5px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>l) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

7) Given the following equations: $10x^2 + 2x + 5 = 0$

<p>m) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>n) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>o) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">2 rational roots</td> <td style="padding: 2px 5px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px 5px;">1 rational root</td> <td style="padding: 2px 5px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>p) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				

Solve for Roots using Discriminant #1

2) Given the following equations: $x^2 - 2x = 2x - 2$

<p>a) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>b) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>c) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px;">2 rational roots</td> <td style="padding: 2px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px;">1 rational root</td> <td style="padding: 2px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>d) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				
<p style="color: red;">a) $x^2 - 4x + 2 = 0$ b) Discriminant = 8 c) (Two irrational roots) d) Roots: $x = \frac{4 \pm \sqrt{8}}{2}$, or approx. {3.4, 0.6}</p>					

3) Given the following equations: $x^2 = 14x - 58$

<p>e) Write the equation in the form $ax^2 + bx + c = 0$.</p>	<p>f) Find the discriminant: $(b^2 - 4ac)$</p>				
<p>g) Use discriminant to describe the nature of the roots of the equation.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="padding: 2px;">2 rational roots</td> <td style="padding: 2px;">2 irrational roots</td> </tr> <tr> <td style="padding: 2px;">1 rational root</td> <td style="padding: 2px;">2 imaginary roots</td> </tr> </table>	2 rational roots	2 irrational roots	1 rational root	2 imaginary roots	<p>h) Complete the quadratic formula to find the solutions.</p>
2 rational roots	2 irrational roots				
1 rational root	2 imaginary roots				
<p style="color: red;">a) $x^2 - 14x + 58 = 0$ b) Discriminant = -36 (Two complex roots) c) Roots: $\{7 + 3i, 7 - 3i\}$</p>					