Algebra 2 Test Review **Name: _____**

Unit 2B – Quadratic Functions and Relations **Date: _____ Block: _____**

Target 1: I CAN simplify an expression containing complex numbers and or radicals.

What do you know about imaginary numbers?

- **What is i?**
- **What is i^2?**
- **What is the proper notation for a complex number?**
- **Do you know the Argand plane?**

1-9: Simplify each expression. Circle your final answer.

1. $i + 3 + \sqrt{-4}$	**2.** $(-6 - 12i) - (-8 + 23i)$	**3.** $(7 - 3i)(8 + 4i)$
4. $\sqrt{-180}$	**5.** $\left(\sqrt{-32}\right)\left(3\sqrt{-48}\right)$	**6.** $(3 - i)^2$
7. i^{163}	**8.** i^{236}	**9.** i^{42}

Target 2: I CAN solve a quadratic equation over the set of complex numbers using the most efficient method (factoring, square roots, or the quadratic formula).

How do you know when to use each method?

- **Factoring:**
- **Square Roots:**
- **Quadratic Formula:**

What does the discriminant ($b^2 - 4ac$) tell you about the nature of the roots?

- **How many roots will it have?**
- **What if the discriminant is negative?**
- **What if the discriminant is zero?**
- **What if the discriminant is a positive perfect square?**
- **What if the discriminant is not a positive perfect square?**

10-18: Solve each quadratic using the most efficient method: factoring, taking square roots, or the quadratic formula.
Circle the final answer. Irrational answers must be written in simplified radical form (no decimals).

10. $4x^2 + 20 = 0$	**11.** $6 = x^2 - x$	**12.** $x^2 - 4 = 0$
13. $x^2 - 9x = 0$	**14.** $4x^2 - 25 = 0$	**15.** $7x^2 + 6x + 2 = 0$
16. $2x^2 - 5x = 12$	**17.** $3(x + 1)^2 + 4 = 22$	**18.** $x^2 - 4x - 32 = 0$

Target 3: I CAN write a quadratic equation in any form given a combination of its parts.

Do you know all 3 forms of a quadratic function?

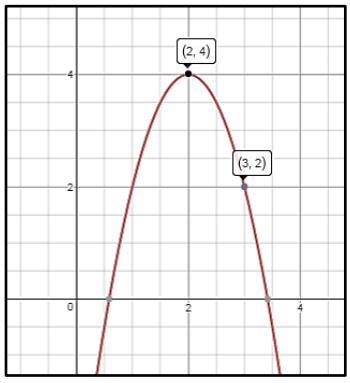
- **Standard:**
- **Vertex:**
- **Intercept/Factored:**

19-22: Write a quadratic function in <u>standard form</u> for the information given. Show all work used to find your equation!

19. roots: x = {–8, 7} and has a y-intercept of (0, –280)

20. vertex: (–4, 6) and contains the point: (–1, 9)

21.



22. Max at (–1, 4) and contains the point (2, –14)

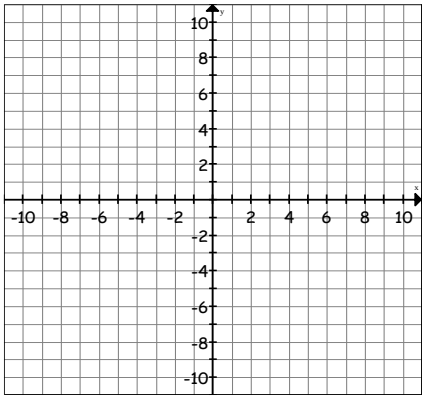
Target 4: I CAN solve non-linear systems of equations algebraically and graphically.

23-24: Graph each system below. Then solve it algebraically in the space on the right.

23.

$y = x^2$

$y = 8 - x^2$



24.

$x + y = 8$

$y = -(x - 4)^2 + 4$