Target 5: I CAN simplify an expression containing complex numbers and or radicals.

1-15: 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.** $(3i)(-2i)(5i)$
7. i^{163}	**8.** i^{236}	**9.** i^{42}
10. $2i(-8 + 5i)$	**11.** $(3 - i)^2$	**12.** $(10 - 4i) - (7 + 3i)$
13. $\dfrac{12 - i}{3i}$	**14.** $\dfrac{2 + i}{2 - i}$	**15.** $\dfrac{3 - 4i}{2 + 5i}$

16-27: Solve each quadratic using the most efficient method: factoring, taking square roots, completing the square, or the quadratic formula. There are 3 problems per method. *Circle the final answer.*

Irrational answers must be written in simplified radical form (no decimals).

16. $4x^2 + 20 = 0$	**17.** $7x^2 + 6x + 2 = 0$	**18.** $x^2 - 4x = 13$
19. $6 = x^2 - x$	**20.** $x^2 - 2x + 10 = 0$	**21.** $3(x + 1)^2 + 4 = 22$
22. $3x^2 + 2x - 1 = 0$	**23.** $\dfrac{1}{4}x^2 + 1 = 33$	**24.** $4x^2 - 25 = 0$
25. $x^2 + 16x - 7 = 0$	**26.** $4x^2 + 5x - 6 = 0$	**27.** $x^2 - 9x = 0$

28-36: Write a quadratic function in <u>standard form</u> for the information given.		
28. roots: x = {−8, 7} and has a y-intercept of (0, −280)	**29.** vertex: (−4, 6) and contains the point: (−1, 9)	**30.** x-intercepts: −1, 6 and contains the point: (1, -20)
31. roots: x = { ± 2*i*}	**32.** Max at (−1, 4) and contains the point (2, −14)	***33.** roots: x = {3 ± 3*i*}
34. Points (2, 4) and (3,2)	**35.** Points (-3, 0), (0, -1.5), & (1,0)	**36.** Points (0, -2), (1, 2), & (4,2)
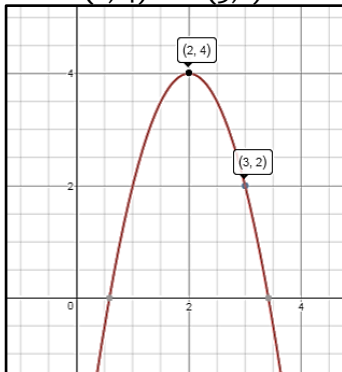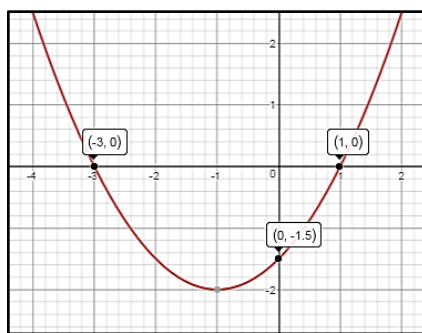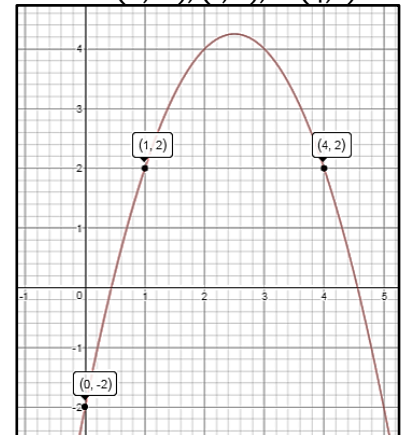
37-39: Graph each system below. Then solve it algebraically in the space on the right.
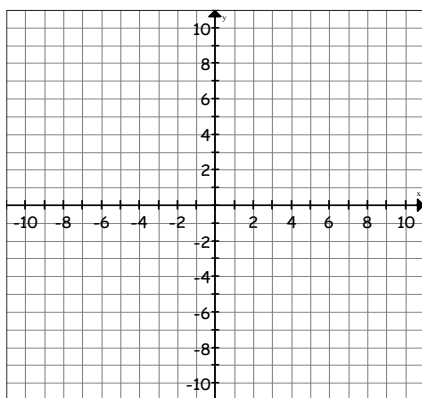
37.

$y = x^2$
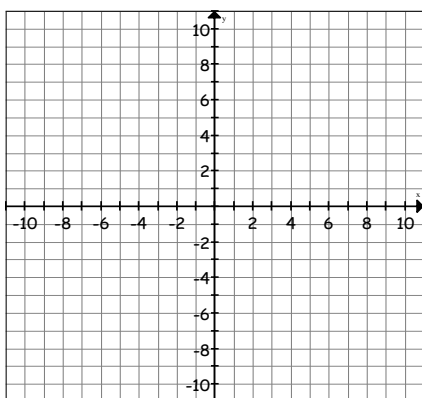
$y = 8 - x^2$
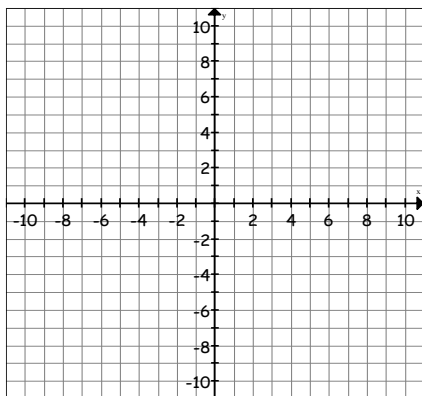
38.

$x + y = 8$

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

39.

$-2x^2 = y - 9$

$y = 3(x - 2)^2 - 3$

ESSENTIAL QUESTION: Be able to answer the essential questions and related questions regarding the unit.

ESSENTIAL QUESTIONS: Be ready to do an essay on any of these questions on the test day!

1. How do the parameters of a function determine the shape of its graph?
2. How do you tell which method to solve quadratic equations is **BEST**?
3. Why is it important to learn a variety of methods for solving quadratic equations?
4. What are the zeros of a quadratic function and how can you tell what kind you have?
5. Describe what the discriminant can tell you about a quadratic function.