Algebra 2 **Name**_____

WS: Chapter 3 Review **Date**_____ **Block**_____

In 1 – 2, solve each quadratic equation by factoring. SHOW ALL WORK!!

1. $2x^2 + 17x + 21 = 0$

2. $4x^2 - 9 = 0$

In 3 – 4, solve each quadratic equation by finding square roots. SHOW ALL WORK!!

3. $x^2 = 121$

4. $(x - 2)^2 + 12 = 0$

In 5 – 6, solve each quadratic equation by completing the square. SHOW ALL WORK!!

5. $x^2 + 12x = -50$

6. $2x^2 + 6x - 9 = 0$

In 7 – 8, solve each quadratic equation by using the quadratic formula. SHOW ALL WORK!!

7. $3x^2 - 12x + 4 = 0$

8. $x^2 + 7x + 2 = 0$

In 9 – 12, solve each quadratic equation using any method. SHOW ALL WORK and state the method you chose.

9. $2x^2 - 1 = -17$

10. $12x^2 - 13x + 7 = 0$

11. $x^2 + 7x + 12 = 0$

12. $x^2 - 8x = 7$

In 13 – 16, perform each operation. Write the answer in standard form.

13. $(3 - 6i) - (7 + 2i)$

14. $5i(4 + 5i)$

15. $(-2 + 3i) + (7 - 6i)$

16. $(5 + 6i)(-4 + 7i)$

17. Find the values of x and y that satisfy the equation $36 - yi = 4x + 3i$.

Find the discriminant of the quadratic equation and describe the number and type of solutions of the equation.

18. $-x^2 - 6x - 9 = 0$

19. $x^2 - 2x - 9 = 0$

20. $x^2 + 6x + 5 = 0$

In 21 – 25, answer each question. Work must be shown!

21. You drop a seashell into the ocean from a height of 40 feet. Write an equation that models the height h(in feet) of the seashell above the water after t seconds. How long is the seashell in the air?

22. While marching, a drum major tosses a baton into the air and catches it. The height h (in feet) of the baton t seconds after it is thrown can be modeled by the function $h(t) = -16t^2 + 32t + 6$.

a. Find the maximum height of the baton.

b. The drum major catches the baton when it is 4 feet above the ground. How long is the baton in the air?

23. A rocketry club is launching model rockets. The launching pad is 30 feet above the groun. Your model rocket has an initial vertical velocity of 105 feet per second. Your friend's model has an initial vertical velocity of 100 feet per second. After how many seconds is your rocket 119 feet above the ground? After how many seconds is your friend's rocket 119 feet above the ground?

24. The number A of tablet computers sold (in millions) can be modeled by the function $A(t) = 4.5t^2 + 43.5t + 17$, where t represents the year after 2010. In what year did the tablet computer sales reach 65 million?

25. A gannet is a bird that feeds on fish by diving into the water. A gannet spots a fish on the surface of the water and dives 100 feet to catch it. The bird plunges toward the water with an initial vertical velocity of -88 feet per second.

a. How much time does the fish have to swim away?

b. Another gannet spots the same fish, and it is only 84 feet above the water and has an initial vertical velocity of -70 feet per second. Which bird will reach the fish first? Justify your answer.