

Name \_\_\_\_\_ Date \_\_\_\_\_

Adv Algebra 2 **CHAPTER 2 WARMUP**

1. What is the equation written in vertex form of a parabola with a vertex of  $(9, -1)$  that passes through  $(7, 7)$ ?

2. Function  $g$  is a transformation of the parent function  $f(x) = x^2$ . The graph of  $g$  is a translation right 3 units and down 5 units of the graph of  $f$ . What is the equation of function  $g$  written in the form  $y = ax^2 + bx + c$

3. What is the vertex of the graph of the function  $(x) = x^2 - 4x$  ?  
A)  $(2, 4)$       B)  $(0,0)$   
B)  $(4, 0)$       C)  $(2, -4)$

4. A pebble is tossed in the air from the top of a cliff. The height of the pebble over time is modeled by the equation  $y = -16x^2 + 32x + 80$ . Graph the equation. Then Identify y-Intercepts, x-intercept and Vertex

5. Use quadratic regression to find the equation of a quadratic function that fits the given points.

x	0	1	4	9
y	3.25	7.75	93.25	475.75

6. Solve the equation  $x^2 + 7x = 30$   
**A**  $x = 15$  and  $x = -2$       **B**  $x = -6$  and  $x = 5$   
**C**  $x = -10$  and  $x = 3$       **D**  $x = 10$  and  $x = -3$

7. A projectile is launched into the air. The function  $h(t) = -16t^2 + 32t + 128$  gives the height,  $h$ , in feet, of the projectile  $t$  seconds after it is launched. After how many seconds will the projectile land back on the ground?

8. Identify the interval(s) on which the function  $y = x^2 + 12x + 27$  is positive.

- A  $-9 < x < -3$
- B  $x < -9$  and  $x > 3$
- C  $x < 3$  and  $x > 9$
- D  $x < -9$  and  $x > -3$

9. Use square roots to solve the equation  $x^2 = -64$  over the complex numbers.

10. Write the product  $(2 + 7i)(2 - 7i)$  in the form  $a + bi$

- A)  $4 - 49i$    B)  $53$
- C)  $4 - 14i^2$    D)  $53 + 14i$

11. Write the quotient  $\frac{2}{5-i}$  in the form  $a + bi$

12. Factor the expression  $x^2 + 9$

13. Solve  $0 = x^2 + 6x + 13$  by completing the square

- A)  $x = 5$  and  $x = 1$
- B)  $x = 3 + i\sqrt{22}$  and  $x = 3 - i\sqrt{22}$
- C)  $x = -1$  and  $x = 1$
- D)  $x = -3 + 2i$  and  $x = -3 - 2i$

14. For the function  $y = x^2 + x + 2$  which statements are true? Select all that apply

- A) The equation in vertex form is  $y = (x + \frac{1}{2})^2$
- B) The equation written in vertex form is  $y = (x + \frac{1}{2})^2 + \frac{7}{4}$
- C) The graph of the function opens upward, so it has a minimum of  $y = \frac{7}{4}$ , at  $x = -\frac{1}{2}$
- D) The graph of the function opens downward, so it has a maximum of  $y = \frac{7}{4}$ , at  $x = -\frac{1}{2}$

15. Solve  $x^2 + 8x - 6 = 0$  using the quadratic formula

- A)  $x = 32 + 2\sqrt{2}$  and  $x = 32 - 2\sqrt{2}$
- B)  $x = -4 + \sqrt{22}$  and  $x = -4 - \sqrt{22}$
- C)  $x = 12$  and  $x = -\frac{1}{2}$
- D)  $x = 4 + 2\sqrt{22}$  and  $x = 4 - 2\sqrt{22}$

16. Solve  $x^2 + 2x + 7 = 0$  using the quadratic formula

17. Richard tosses a ball into the air. The function  $h(t) = -5t^2 + 10t + 6$  gives the approximate height  $h$ , in meters, of the ball  $t$  seconds after he tosses it. Does the ball reach a height of 12m?

18. What value(s) of  $b$  will cause  $27x^2 + bx + 3 = 0$  to have one real solution?

19. Determine the number of solutions of the system  $\begin{cases} y = x^2 - 3 \\ y = -2x + 4 \end{cases}$

- A 2
- B 1
- C 3
- D 0

20. Solve the equation  $2x^2 + 5x - 8 = \frac{5}{2}x + 20$  by writing a linear-quadratic system and solving using the intersection feature of a graphing calculator. Round to the nearest tenth.

$x \approx$  \_\_\_\_\_ and  $x \approx$  \_\_\_\_\_