

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 $x \approx$ _____