8. Use square roots to solve the equation $x^2 = -121$ over the complex numbers.

9. Write the product $3i(5 - 3i)$ in the form $a + bi$.

A $6 + 8i$ C -6

B $-9 + 15i$ D $9 + 15i$

10. What is the equation written in vertex form of a parabola with a vertex (-3, -8) that passes through (0, 37)?

11. Solve $-2 = x^2 + 2x + 8$ by completing the square.

A $x = -1 - 9i$ and $x = -1 + 9i$

B $x = -1 + 3i$ and $x = -1 - 3i$

C $x = 4$ and $x = 2$

D $x = \sqrt{10} - 1$ and $x = -\sqrt{10} - 1$

12. A function is defined by the equation $y = x^2 + 5x + 4$. Select all the statements that are true about this function.

☐ A The graph of the function has a minimum of $y = -\frac{9}{4}$ at $x = -\frac{5}{2}$.

☐ B The equation written in vertex form is $y = \left(x + \frac{5}{2}\right)^2 - \frac{9}{4}$.

☐ C The graph of the function has a minimum of $y = -\frac{9}{4}$ at $x = \frac{5}{4}$.

☐ D The range of the function is all real numbers.

☐ E The domain of the function is all real numbers.

13. Solve $x^2 + 5x = -8$ using the Quadratic Formula.

14. What is an equation for the parabola with focus (0, −10) and directrix $y = 10$?

15. A toy cannon ball is launched from a cannon on top of a platform. The equation $h(t) = -5t^2 + 15t + 10$ gives the height h, in meters, of the ball t seconds after it is launched. What equation can be used to tell whether the ball reaches a height of 24 m? Does the ball reach a height of 24 m?

Equation: _____

Answer: _____

16. Solve the quadratic equation $x^2 - 7x - 18 = 0$.

17. Determine the number of real solutions of the system $\begin{cases} y = x^2 + 1 \\ y = 1 \end{cases}$.

A 0 C 2

B 1 D 3

18. Write an equation for a parabola with x-intercepts (-1, 0) and (6, 0) which passes through the point (7, 4).

19. The function $h(x) = -18(x - 5)^2 + 9$ represents the height of a bird ***y*** over time ***x***, as it flies past the school. What point on the graph represents the greatest height of the bird above the ground?

20. What is the equation of a parabola with focus (0, -7) and directrix y = 7

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