Algebra II Practice Test **Quadratic Functions** **Unit 3 Part 1**

Name_____ Period_____ Date_____

NON-CALCULATOR SECTION

Vocabulary: Define each word and give an example.

1. Quadratic Function

2. Vertex

3. Complex Number

Short Answer:

4. What is the imaginary unit and what does it stand for?

5. Given the quadratic equation $ax^2 + bx + c = 0$, describe how to find the vertex.

Review:

6. Interpret the correlation coefficient: r = -0.65

7. Write an equation in standard form for the line perpendicular to $-3x + 2y = -5$ that passes through the point $(2, -1)$.

8. Find $f(-2)$ for $f(x) = 2x^2 - 3x + 1$

9. Find the inverse of the function: $f(x) = \frac{x+4}{3}$

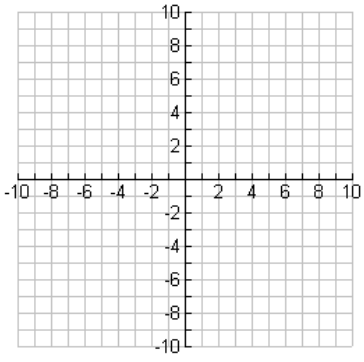
Problems:

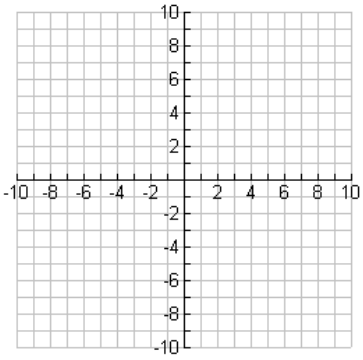
Be sure to show all work used to obtain your answer. **Circle or box in the final answer.**

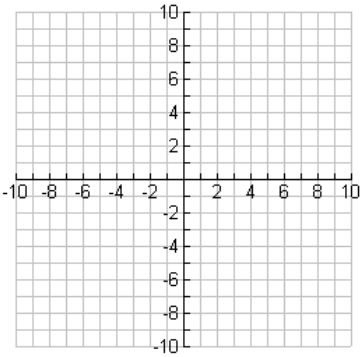
10. Simplify:
    a. $\sqrt{-72}$ b. $-4\sqrt{-45}$ c. $\sqrt{225} - \sqrt{-49}$

11. Graph the quadratic functions. **Find the vertex and axis of symmetry** for each graph.

a. $y = -x^2 + 1$ b. $y = (x-2)^2 + 4$ c. $y = x^2 - 2x - 5$







12. Simplify the following:

a. $(-5-8i)-(-4-7i)$ b. $(3+2i)^2$ c. $(2-7i)+(-1-9i)$

d. $3i(4-5i)$ e. $(-8+10i)(4-3i)$

13. Solve the quadratic equation: $3x^2 + 21 = 0$

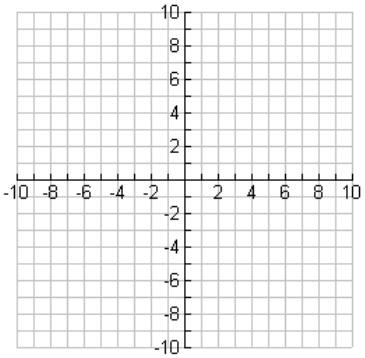
14. Evaluate i^{66}.

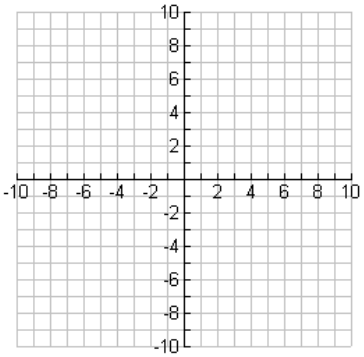
15. Given $f(x) = x^2 + 8x - 9$, find the vertex and axis of symmetry of the function. Is the vertex a maximum or a minimum? Explain.

16. Graph the quadratic equations:

a. $y = x^2 - 4x + 3$

b. $y = x^2 - 4x$

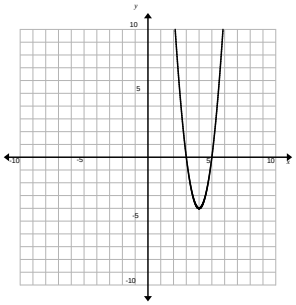




Multiple Choice Questions: **Circle the best answer**.

17. Which graph represents the function $y = -4\left(x^2 + 8x + 15\right)$?

A.



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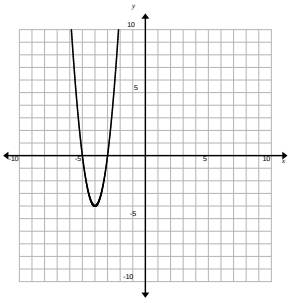
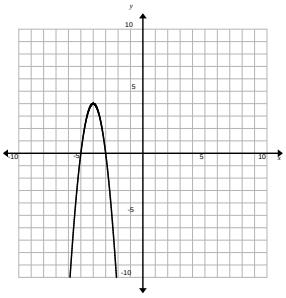
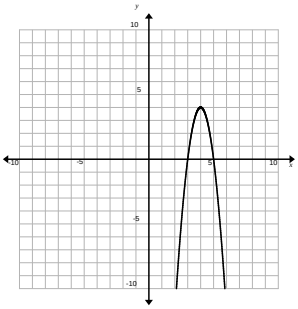


C.



D.



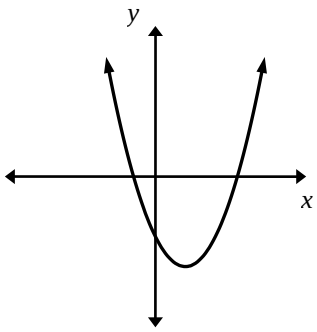
18. Solve $x^2 + 25 = 0$ over the set of complex numbers.

(A) $\pm 25i$ (B) ± 5

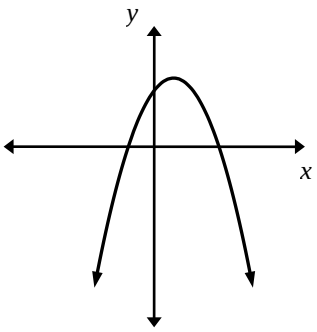
(C) $\pm 5i$ (D) ± 25

19. A quadratic function is given by $h(x) = ax^2 + bx + c$, where *a* and *c* are negative real numbers. Which of these could be the graph of $y = h(x)$?

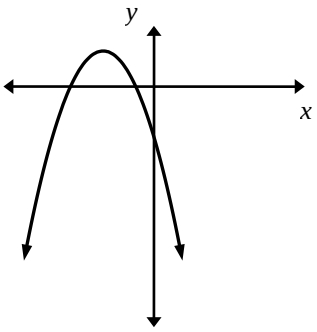
(A)



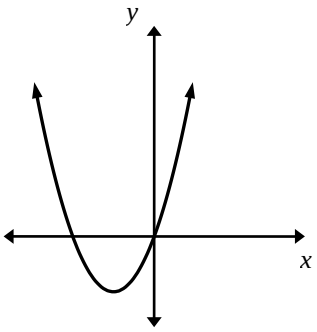
(B)



(C)



(D)



20. Where is the axis of symmetry in the quadratic $f(x) = 3(x-9)(x+5)$?

A. $x = 4$
B. $x = 2$
C. $x = 6$
D. $x = -2$