

Enhanced End of Topic Assessment

Name _____ Date _____

Part A: Multiple-Choice Questions

1. Transform $f(x) = 2x^2 + 8x + 4$ to vertex form and identify the vertex.
 - a. $f(x) = (x + 2)^2 - 6$, Vertex: $(-2, -6)$
 - b. $f(x) = (x + 2)^2 - 6$, Vertex: $(2, -6)$
 - c. $f(x) = 2(x + 2)^2 - 4$, Vertex: $(2, 4)$
 - d. $f(x) = 2(x + 2)^2 - 4$, Vertex: $(-2, -4)$
2. Which function represents a parabola that opens downward, has a vertex of $(3, -1)$, and goes through the point $(6, -4)$?
 - a. $f(x) = -\frac{1}{3}(x - 3)^2 + 1$
 - b. $f(x) = -\frac{1}{3}(x - 3)^2 - 1$
 - c. $f(x) = (x - 3)^2 - 1$
 - d. $f(x) = -(x - 3)^2 - 1$
3. What are the roots of the function $f(x) = x^2 - x + 7$?
 - a. $x = \pm 3\sqrt{3}i$
 - b. $x = \frac{1 \pm 27i}{2}$
 - c. $x = \frac{1 \pm 3\sqrt{3}i}{2}$
 - d. $x = \frac{1 \pm 3\sqrt{3}}{2}$
4. Which expression is equivalent to $(9i + 3) - (-4i - 1)$?
 - a. $13i + 4$
 - b. $-5i - 2$
 - c. $5i + 4$
 - d. $-13i - 2$

5. What are the roots of the function $f(x) = x^2 + 2x - 1$?

a. $x = -1 \pm \sqrt{2}$

b. $x = 1 \pm \sqrt{2}$

c. $x = -1 \pm 2\sqrt{2}$

d. $x = 1 \pm 2\sqrt{2}$

Part B: Open-Response Questions

- 6.** Rob and Jeni each recruit three people to be election campaign volunteers. The next week they ask each of those volunteers to recruit three more campaign volunteers. They want all new volunteers each week to recruit three more volunteers.
- Write an equation that represents the number of new volunteers each week.
 - Describe this pattern as linear, quadratic, exponential, or none of these. Explain your reasoning.
 - Predict the number of new volunteers in week 4.
- 7.** Analyze the function $f(x) = x^2 - 4x - 8$.
- Rewrite $f(x)$ in vertex form.
 - Is a graph of the function concave up or concave down?
 - What is the y -intercept?
 - What is the vertex?
- 8.** Write a quadratic function given the roots $(-3, 0)$ and $(2, 0)$ and the point $(1, -12)$.

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- 11.** Use the completing the square method to solve the quadratic equation
 $3x^2 + 18x + 21 = 0$.

- 12.** Solve for x using the Quadratic Formula. Round your answer to the nearest hundredth.
 $6x^2 - 2x + 5 = 0$

- 13.** Solve the quadratic equation.
 $-2 = \frac{1}{3}x^2 + 25$

Part C: Griddable Response Questions

Record your answers and fill in the bubbles.

14. What is the product of $(4 + 3i)(4 - 3i)$?

+	0	0	0	0	0	0	0
-	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

15. Rewrite the function $f(x) = 4x^2 + 8x + 3$ in vertex form. What is the x-value of the vertex?

+	0	0	0	0	0	0	0
-	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9