Name: **Math Academy 1**

Date: **Review 3 Version A**

[A] Circle whether each statement is true or false.

T F 1. $(8 - 2i)(8 + 2i)$ is a real number.

T F 2. $y = 6x^2 + 9x + 5$ has no x-intercepts.

T F 3. The roots of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 4. The zeros of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 5. The solutions to $x^2 + 2x - 8 = 0$ are $x = 2$ and $x = -4$.

T F 6. The x-intercepts of $y = x^2 + 2x - 8$ are (2, 0) and (-4, 0).

T F 7. The parabola $y = 2x^2 + 8x + 7$ has a minimum at $y = -1$.

T F 8. The vertex of the parabola $y = -.04(x + 13)^2 + 9$ is (13, 9).

T F 9. On the complex plane, $6 + 5i$ is represented by the point (6, -5).

T F 10. Any quadratic equation can be solved with the quadratic formula.

[B] Sketch. Label the intercepts and the vertex with their coordinates.

1. $f(x) = x^2 + 8x - 9$

2. $g(x) = 0.2(x - 2)(x + 8)$

[C] Simplify completely.

1. $\sqrt[3]{32ab^5c^9}$

2. $\dfrac{6}{8+\sqrt{2}}$

3. $\dfrac{1-6i}{6-2i}$

[D] Solve. Simplify answers completely. (Do not round.)

1. $3(x-2)^2 = -75$

2. $x(x-2)(x^2+6x+8) = 0$

3. $4x^2 + 4x = -5$

[E] Optional.

1. Make up an equation, without parentheses, for each of the stated criteria.

a) $f(x)$ has three x-intercepts.

b) $g(x)$ has four different roots and two x-intercepts.

Name: **Math Academy 1**

Date: **Review 3 Version B**

[A] Circle whether each statement is true or false.

T F 1. $(8 - 2i)(8 + 2i)$ is a real number.

T F 2. $y = 6x^2 + 9x + 5$ has no x-intercepts.

T F 3. The roots of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 4. The zeros of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 5. The solutions to $x^2 + 2x - 8 = 0$ are $x = 2$ and $x = -4$.

T F 6. The x-intercepts of $y = x^2 + 2x - 8$ are (2, 0) and (-4, 0).

T F 7. The parabola $y = 2x^2 + 8x + 7$ has a minimum at $y = -1$.

T F 8. The vertex of the parabola $y = -.04(x + 13)^2 + 9$ is (13, 9).

T F 9. On the complex plane, $6 + 5i$ is represented by the point (6, -5).

T F 10. Any quadratic equation can be solved with the quadratic formula.

[B] Sketch. Label the intercepts and the vertex with their coordinates.

1. $f(x) = 2x^2 + 20x - 24$

2. $g(x) = -\frac{3}{4}(x + 7)(x - 3)$

[C] Simplify completely.

1. $\sqrt[3]{96ab^{36}c^{13}}$

2. $\dfrac{6}{2+\sqrt{8}}$

3. $\dfrac{3+5i}{4-6i}$

[D] Solve. Simplify answers completely. (Do not round.)

1. $-4(x-3)^2+8=44$

2. $2x^3(x+7)(x^2+2x-8)=0$

3. $4x^2+3=6x$

[E] Optional.

1. Make up an equation, without parentheses, for each of the stated criteria.

a) $f(x)$ has three x-intercepts.

b) $g(x)$ has three different roots and one x-intercept.

Name: **Math Academy 1**

Date: **Review 3 Version C**

[A] Circle whether each statement is true or false.

T F 1. $(8 - 2i)(8 + 2i)$ is a real number.

T F 2. $y = 6x^2 + 9x + 5$ has no x-intercepts.

T F 3. The roots of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 4. The zeros of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 5. The solutions to $x^2 + 2x - 8 = 0$ are $x = 2$ and $x = -4$.

T F 6. The x-intercepts of $y = x^2 + 2x - 8$ are (2, 0) and (-4, 0).

T F 7. The parabola $y = 2x^2 + 8x + 7$ has a minimum at $y = -1$.

T F 8. The vertex of the parabola $y = -.04(x + 13)^2 + 9$ is (13, 9).

T F 9. On the complex plane, $6 + 5i$ is represented by the point (6, -5).

T F 10. Any quadratic equation can be solved with the quadratic formula.

[B] Sketch. Label the intercepts and the vertex with their coordinates.

1. $f(x) = 24x^2 - 34x - 45$

2. $g(x) - 8 = 2(x - 3)^2$

[C] Simplify completely.

1. $\sqrt[3]{243ab^{27}c^{304}}$

2. $\dfrac{6}{8+\sqrt{32}}$

3. $\dfrac{8+4i}{8-4i}$

[D] Solve. Simplify answers completely. (Do not round.)

1. $-4(x-5)^2+1=49$

2. $7x^3(x+9)(3x+2)(x^2-4x-12)=0$

3. $8x=6x^2+5$

[E] Bonus.

1. Make up an equation, without parentheses, for each of the stated criteria.

a) $f(x)$ has three x-intercepts.

b) $g(x)$ has six different roots and four x-intercepts.

Name: **Math Academy 1**

Date: **Review 3 Version D**

[A] Circle whether each statement is true or false.

T F 1. $(8 - 2i)(8 + 2i)$ is a real number.

T F 2. $y = 6x^2 + 9x + 5$ has no x-intercepts.

T F 3. The roots of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 4. The zeros of $x^2 + 2x - 8$ are $x = 2$ and $x = -4$.

T F 5. The solutions to $x^2 + 2x - 8 = 0$ are $x = 2$ and $x = -4$.

T F 6. The x-intercepts of $y = x^2 + 2x - 8$ are (2, 0) and (-4, 0).

T F 7. The parabola $y = 2x^2 + 8x + 7$ has a minimum at $y = -1$.

T F 8. The vertex of the parabola $y = -.04(x + 13)^2 + 9$ is (13, 9).

T F 9. On the complex plane, $6 + 5i$ is represented by the point (6, -5).

T F 10. Any quadratic equation can be solved with the quadratic formula.

[B] Sketch. Label the intercepts and the vertex with their coordinates.

1. $f(x) = 3x^2 + 8x - 9$

2. $g(x) = -24x^2 + 6x$

[C] Simplify completely.

1. $\sqrt[4]{3888ab^{16}c^{731}}$

2. $\dfrac{6}{8+\sqrt{72}}$

3. $\dfrac{8+6i}{2i}$

[D] Solve. Simplify answers completely. (Do not round.)

1. $-4(x-5)^2-1=49$

2. $12x^5(4x+7)(x^2+9)(2x^2+13x+15)=0$

3. $8x^2=6x^3+5x$

[E] Bonus.

1. Make up an equation, without parentheses, for each of the stated criteria.

a) $f(x)$ has three x-intercepts.

b) $g(x)$ has nine different roots and five x-intercepts.