STEM Accelerated Analytic Geometry Unit 1 - Quadratics Study Guide

1. Memorize the special names for Polynomials (Degree & Number of Terms) [1.1]

2. Know exponent rules [1.3]

3. Know how to add, subtract, multiply & divide polynomials using exponent rules. [1.1]

4. Know what an imaginary number is. $\sqrt{-20}$, $4i$ [1.2]

5. Know the imaginary numbers cycle $i = \sqrt{-1}$, $i^2 = -1$, $i^3 = -i$, $i^4 = 1$

6. Be able to add, subtract, multiply & divide imaginary numbers. [1.2]

7. Know what a conjugate is [1.2]

8. Be able to convert from radical form to exponent form (and exponent form to radical form) [1.4]

9. Understand the Complex Number System and be able to differentiate between Real Numbers & Imaginary Numbers. In addition be able to distinguish between Rational & Irrational Numbers. [1.6]

10. Be able to factor any factorable binomial & trinomial quadratic equations. In addition, know the factoring techniques: [1.7, 1.8]

(Binomial) 2 terms	3 terms (Trinomial)
1. GCF Factoring $5x - 10x^2$	1. GCF Factoring $2x^2 - 2x + 20$
2. Difference of Sq. $x^2 - 25$	2. Factoring Trinomials $x^2 - x + 10$

11. Be able to solve quadratic binomials & trinomials by using the appropriate solving technique. [1.9, 1.10, 1.11]

(Binomial) 2 terms	3 Terms (Trinomial)
1. GCF Factoring (set = 0)	1. GCF Factoring (set = 0)
2. Difference of Squares (set = 0)	2. Factoring Trinomial (set = 0)
3. Taking the Square Root (isolate the quad term)	3. Complete the Square (isolate the constant term)
	4. Quadratic Formula (set = 0)

12. Know that solving quadratics means to find the x-intercepts graphically. [1.9]

13. Know the other ways to express finding x-intercepts in a quadratic: roots, zeros, solutions, find x. [1.9]

14. Know that standard form for quadratics is $ax^2+bx+c=0$ and vertex form for quadratics is $y=a(x-h)^2+K$ [1.9, 1.12]

15. Understand the information that the vertex form of Quadratics gives [1.12]

$y=a(x-h)^2+k$ vertex: (h,k)

axis of symmetry: $x=h$

16. Know the transformations for Quadratics and how to graph quadratics [1.12]

17. Be able to state characteristics from Quadratic graphs: Domain, Range, zero(s), y-intercept, Intervals of Increase/Decrease, Vertex, Extrema. [1.13]

18. Be able to change from vertex form to standard form (and vice versa). [1.14]

19. Know the vertex formula and be able to use it when the Quadratic equation is in standard form. $x = \frac{-b}{2a}$ $y = f\left(\frac{-b}{2a}\right)$

Test Format 90 minute examination

Section 1 — Multiple Choice — about 20-30 questions [55 minutes]

Section 2 — Free Response — about 5-7 questions [35 minutes]