

Integrated Mathematics 2 – Key Objectives | Quadratic Functions Unit

This Quadratic Functions Unit will encompass 2 MAJOR concepts – 1 of which you know from our first Unit in Integrated Math 10 and 1 of which will be new to you. The MAJOR concepts are: (1) Quadratic Functions and (2) Functions. Both of these major concepts will be continually revisited in later units in the course, so it is important to understand these concepts and master the required skills.

(A) Quadratic Functions

a. Quadratic Functions – Graphic Perspective

- Identify whether or not a function is quadratic. **(N)**
- Use a quadratic function to find unknown values, especially **in application problems**. **(N)**
- Graph quadratic functions (parabolas) and be able to find and identify key features of the graph, including
 - x-intercepts/zeros/solutions/root **(N)**
 - the y-intercept **(N)**
 - the vertex (maximum/minimum point) **(N)**
 - the axis of symmetry **(N)**
- Understand the relationship between “vertex form” and transformations of parabolas. **(N)**
- Given a quadratic function in ANY form, identify the vertex and graph the parabola. **(N)**

b. Quadratic Functions – Algebraic Perspective

- Solve quadratic equations by taking the square root of both sides. **(N)**
- Solve quadratic equations by factoring. **(R)**
- Solve quadratic equations by using the quadratic formula. **(N)**
- Use quadratic equation solving techniques **in application problems**. **(N)**
- Solve quadratic equations by completing the square. **(N)**
- Solve systems of equations involving both linear and quadratic functions. **(N)**

(B) Functions

- a. Understand and identify the domain and range of quadratic functions. **(R)**
- b. Understand function notation and be able to evaluate and solve functions. **(R)**
- c. Understand and be able to perform function composition (linear with quadratic) and thereby introduce transformations **(N)**
- d. Apply transformations of quadratic functions – dilations, reflections, vertical and horizontal translations **(N)**