

Using this Chapter with the Functions and Relations Course and the Functions Course

Functions and Relations (University)	
Students in this course must be prepared for the abstract mathematical concepts of the Geometry and Discrete Mathematics course. These students will be required to broaden their skills in solving complex problems. To help prepare these students for this course, consider the following sections:	
3.2	Give ample opportunities for students to work with $f(x)$ notation after briefly discussing practical examples.
3.3	Point out the connection between inequalities and statements about the domain and range of a function, encouraging students to identify the domain and range by inspecting the equation of the function. Emphasize whether endpoint(s) are included or excluded.
3.4 to 3.6	Emphasize the algebraic expression of the inverse of a function and the related graphs. Note that the inverses of functions are not always functions, setting the stage for discussing one-to-one relations or graphs of higher order polynomial functions. Refer explicitly to working backward as a problem-solving tool.
3.7	In this section, students will see that transformation “rules” can be applied not only to parabolas but also to any function. Encourage students to recognize patterns. Ensure that students have ample opportunity to manipulate functions and predict graphs from the algebraic expressions, and vice versa. Functions and Relations students need to understand the rationale behind the sequence of operations, because of the horizontal transformations required for the trigonometric functions. Perhaps they will also understand, after this chapter, why a horizontal stretch might be equivalent to a vertical compression for a parabola.
Functions (University/College)	
Students in this course must be prepared to build on their experience with functions if they plan to take the Advanced Functions and Introductory Calculus course in grade 12. Note that these students will not encounter trigonometric functions in the calculus course. However, these students will use polynomial, rational, exponential, and logarithmic functions to model real-world problems in a range of applications. To help prepare these students for this course, consider the following sections:	
3.2	Emphasize how functions describe many situations and the critical characteristics of a function. Compare a function to a relation. A function can be described as a diagram, a graph, and as $f(x)$ notation. Discuss the rate at which the dependent variable changes.
3.3	Provide examples where a restriction on the domain, and hence on the range, is implied by the context.
3.4 to 3.6	Encourage students to approach graphing by first graphing the simplest relation and transforming it in steps into the desired graph. Use technology to show students the effect of one or several transformations applied to a base function. Relate the material to practical applications, for example, video images in advertising logos.