describe parent functions symbolically and graphically, including $f(\mathbf{x}) = x^n$ $f(x) = \ln x$ $f(x) = \log_a x \quad \mathbf{I}$ $f(\mathbf{x}) = x^n \cdot f(\mathbf{x}) = e^x \cdot$ f(x) = |x| $f(x) = a^x$, $f(x) = \sin x$, $f(\mathbf{x}) = \arcsin x$, etc.[1.A]

determine the domain and range of functions using graphs, tables, and symbols.[1.B]

describe symmetry of graphs of even and odd functions.[1.C]

recognize and use connections among significant values of a function (zeros, maximum values, minimum values, etc.), points on the graph of a function, and the symbolic representation of a function.[1.D]

investigate the concepts of continuity, end behavior, asymptotes, and limits and connect these characteristics to functions represented graphically and numerically.[1.E]

apply basic transformations, including $x \bullet f(x)$, f(x)+d, f(x-c), $f(b \bullet x)$ and compositions with absolute value functions, including |f(x)| and f(|x|) to the parent functions.[2.A]

perform operations including composition on functions, find inverses, and describe these procedures and results verbally, numerically, symbolically, and graphically.[2.B]

investigate identities graphically and verify them symbolically, including logarithmic properties, trigonometric identities, and exponential properties.[2.C]

investigate properties of trigonometric and polynomial functions.[3.A]

use functions such as

logarithmic, exponential,

trigonometric, polynomial, etc. to model real-life data.[3.B] use regression to determine the appropriateness of a linear function to model reallife data (including using technology to determine the correlation coefficient).[3.C]

use properties of functions to analyze and solve problems and make predictions.[3.D]

solve problems from physical situations using trigonometry, including the use of Law of Sines, Law of Cosines, and area formulas and incorporate radian measure where needed.[3.E]

represent patterns using

arithmetic and geometric

sequences and series.[4.A]

use arithmetic, geometric, and

other sequences and series to

solve real-life problems.[4.B]

describe limits of sequences and apply their properties to investigate convergent and divergent series.[4.C]

apply sequences and series to solve problems including sums and binomial expansion.[4.D]

use conic sections to model motion, such as the graph of velocity vs. position of a pendulum and motions of planets.[5.A]

use properties of conic sections to describe physical phenomena such as the reflective properties of light and sound.[5.B]

convert between parametric and rectangular forms of functions and equations to graph them.[5.C]

use parametric functions to simulate problems involving motion.[5.D]

use the concept of vectors to model situations defined by magnitude and direction.[6.A]

analyze and solve vector problems generated by reallife situations.[6.B]