Expectations

1.1 The student will represent functions and relations numerically, graphically, and algebraically.

1.2 The student will describe and apply properties of functions and relations.

1.3 The student will perform a variety of operations and geometrical transformations on functions and relations

1.4 The student will use numerical, algebraic, and graphical representations of functions and relations in order to solve real-world problems.

4.2 The student will estimate and compute using mental strategies, paper and pencil, and technology.

Indicators

1.1.PC.3 write an exponential function or expression in an equivalent form using laws of exponents.

1.2.PC.3 describe the properties of linear, quadratic, power, polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions.

1.2.PC.6 identify and distinguish between the graphs of linear, quadratic, power, polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions.

1.3.PC.2 describe the effect of transformations on graphs of exponential functions, $f(x) = a(b)^{cx}$.

1.3.PC.3 describe the effect of transformations on graphs of logarithmic functions.

1.4.PC.1 solve exponential equations, including base *e*, using various methods including laws of logarithms.

1.4.PC.2 solve logarithmic equations, including base *e*, using laws of logarithms and exponents.

1.4.PC.7 interpret and solve problems involving exponential functions.

1.4.PC.8 interpret and solve problems involving logarithmic functions.

4.2.PC.5 evaluate a logarithm using the change of base rule.

Essential Questions

How do exponential functions model real-world problems and their solutions?

How do logarithmic functions model real-world problems and their solutions?

Enduring Understanding

The characteristics of exponential and logarithmic functions and their representations are useful in solving real-world problems