

PS 1 Students will be able to add, subtract, multiply and divide polynomials and rational expressions the same way they add, subtract, multiply and divide integers and rational numbers respectively.

Students will understand that polynomials and rational expressions are closed under all four arithmetic operations. That is, when they add, subtract, multiply or divide polynomials and rational expressions, the answers will be polynomials and rational expressions respectively.

[\(A.APR.1. 5-7\)](#)

PS 2 Students will understand that if  $r$  is a zero of a polynomial function  $p(x)$ , then the following statements are true and equivalent ([A.APR.2-3; F.IF.7](#))

- $p(r) = 0$
- $r$  is a solution of  $p(x) = 0$
- $x - r$  is a factor of  $p(x)$
- The remainder is 0 when  $p(x)$  is divided by  $x - r$ .
- If  $r$  is real, then  $(r, 0)$  is an  $x$ -intercept of the graph of  $p(x)$ .

PS 3 Students will be able to use methods for adding and subtracting rational expressions to solve equations. ([A.REI.2-11](#))

PS 4 Students will be able to transform the graph of any function by...

- Shifting (translating) it horizontally and vertically.
- Stretching or compressing it horizontally and vertically.
- Reflecting on the  $x$ -axis and  $y$ -axis.

Students will understand that...

- When they transform the graph of a function, they must also change the function.
- A new function is created when they change an existing function.
- They can use transformations to graph families of functions. ([F.BF.3](#))

PS 5 Students will be able to evaluate trigonometric functions with any angle, including negative angles and those measured in radians. ([F.TF.1-5](#))

- PS 6 Students will understand that an inverse undoes or reverses a function. Students will be able to use inverses to evaluate logarithmic and exponential functions and to solve radical, logarithmic, and exponential equations. ([F.LE.4](#); [F.BF.4](#))
- PS 7 Students will be able to calculate the area of a triangle using the sine function and determine missing parts of a triangle using the Law of Sines and Cosines. In addition, they will be able to visualize relationships between two-dimensional and three-dimensional objects and apply geometric concepts in modeling situations involving density, volume, and surface area. ([G.SRT.9-10](#); [G.GMD.4](#); [GMG.1-3](#))
- PS 8 Students will be to make inferences about populations by...
- Visualizing and analyzing data distributions.
  - Computing summary statistics (e.g. mean, standard deviation) for a sample set.
  - Using confidence intervals around sample statistics.
- Students will understand that there are different ways to collect data (i.e. sample surveys, observational studies, experiments, and simulations). and that each method addresses a specific purpose and type of question. ([S.ID.4](#); [S.IC.1 - 4](#))