

Precalculus

Functions PC.F

F-PREL. Operations with Polynomial, Rational, Exponential, and Logarithmic Functions PC.F-PREL

- 1 Identify, graph, analyze functions and perform function operations. PC.F-PREL.A
 - 1 Understand the concept of a function and its notation. PC.F-PREL.A.1
 - 2 Identify and graph various functions, including linear, quadratic, polynomial, rational, exponential, logarithmic, and trigonometric functions. PC.F-PREL.A.2
 - 3 Analyze functions by considering domain, range, symmetry, intercepts, and asymptotic behavior. PC.F-PREL.A.3
 - 4 Perform operations of addition, subtraction, multiplication, division, and composition of functions. PC.F-PREL.A.4
- 2 Analyze, graph, and solve problems using polynomial and rational functions. PC.F-PREL.B
 - 1 Describe how quantities change with respect to each other. PC.F-PREL.B.1
 - 2 Understand the behavior of polynomial functions, including end behavior, turning points, and factors. PC.F-PREL.B.2
 - 3 Perform polynomial long division and synthetic division. PC.F-PREL.B.3
 - 4 Identify and graph rational functions and analyze their asymptotic behavior and discontinuities. PC.F-PREL.B.4
 - 5 Solve polynomial and rational equations and inequalities. PC.F-PREL.B.5
 - 6 Model aspects of scenarios using polynomial and rational functions. PC.F-PREL.B.6
 - 7 Identify assumptions and limitations of function models. PC.F-PREL.B.7

- 3 Analyze, graph, and solve problems using exponential and logarithmic functions. **PC.F-PREL.C**
 - 1 Define exponential and logarithmic functions and their properties. **PC.F-PREL.C.1**
 - 2 Compose exponential and logarithmic functions and find inverses. **PC.F-PREL.C.2**
 - 3 Graph exponential and logarithmic functions and understand their transformations. **PC.F-PREL.C.3**
 - 4 Solve exponential and logarithmic equations and inequalities. **PC.F-PREL.C.4**
 - 5 Apply exponential and logarithmic functions in realworld contexts such as population growth, compound interest, and exponential decay. **PC.F-PREL.C.5**
 - 6 Model data sets with exponential functions. **PC.F-PREL.C.6**
 - 7 Model scenarios with logarithmic functions. **PC.F-PREL.C.7**
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F-TF. Properties of Trigonometric Functions **PC.F-TF**

- 1 Analyze, graph, and solve problems using trigonometric functions. **PC.F-TF.A**
 - 1 Define trigonometric functions and their reciprocal functions. **PC.F-TF.A.1**
 - 2 Graph trigonometric functions including sine, cosine, tangent, cosecant, secant, and cotangent. **PC.F-TF.A.2**
 - 3 Understand the unit circle and use it to define trigonometric values for unique angles. **PC.F-TF.A.3**
 - 4 Use inverse trigonometric functions to solve trigonometric equations. **PC.F-TF.A.4**
 - 5 Solve trigonometric equations and inequalities and apply trigonometric identities. **PC.F-TF.A.5**
 - 6 Model data and scenarios with sinusoidal functions. **PC.F-TF.A.6**
 - 7 Graphing functions using polar coordinates. **PC.F-TF.A.7**
 - 8 Describe how angles and radii change with respect to each other in a polar graph. **PC.F-TF.A.8**
 - 2 Use trigonometric identities to solve problems. **PC.F-TF.B**
 - 1 Use trigonometric identities to simplify expressions and verify identities. **PC.F-TF.B.1**
 - 2 Solve trigonometric equations using algebraic and graphical methods. **PC.F-TF.B.2**
 - 3 Apply trigonometric identities to solve problems involving triangles, vectors, and periodic phenomena. **PC.F-TF.B.3**
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F-AG. Analytic Geometry **PC.F-AG**

- 1 Solve problems using properties of analytic geometry. **PC.F-AG.A**
 - 1 Understand the properties of conic sections, including circles, parabolas, ellipses, and hyperbolas. **PC.F-AG.A.1**
 - 2 Graph conic sections in standard and general forms. **PC.F-AG.A.2**
 - 3 Solve problems involving distance, midpoint, slope, and equations of lines and circles. **PC.F-AG.A.3**
 - 4 Use transformations to analyze and graph geometric figures. **PC.F-AG.A.4**
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F-SS. Reasoning with Sequences and Series **PC.F-SS**

- 1 Solve problems involving sequences and series. **PC.F-SS.A**
 - 1 Define arithmetic and geometric sequences and series. **PC.F-SS.A.1**
 - 2 Find the n th term, partial sums, and sums of finite and infinite sequences and series. **PC.F-SS.A.2**
 - 3 Apply sequences and series to solve problems in mathematics and other disciplines. **PC.F-SS.A.3**
- 2 Reason with functions involving parameters, vectors, and matrices. **PC.F-SS.B**
 - 1 Describe how quantities change with respect to each other in a parametric function. **PC.F-SS.B.1**
 - 2 Graph conic sections using implicitly defined functions and parametric functions. **PC.F-SS.B.2**
 - 3 Use vectors to describe the motion of an object. **PC.F-SS.B.3**
 - 4 Describe the impact of a transformation matrix on a graphical object. **PC.F-SS.B.4**
 - 5 Model change in a context using matrices. **PC.F-SS.B.5**