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Carnegie Learning
MODULE 1: Function Overview

| Unit | Workspace | Standard |
| :--- | :--- | :---: |
| Searching for Patterns | Exploring and Analyzing Patterns | A.SSE.A. 1 |
|  | Comparing Familiar Function Representations | A.SSE.A. 1 |
| Graphs of Functions | Identifying Key Characteristics of Graphs of Functions | F.IF.B. 4 |
|  | Transforming Functions | F.BF.B.3 |

## MODULE 2: Quadratic Functions

| Unit | Workspace | Standard |
| :--- | :--- | :---: |
| Forms of Quadratic Functions | Examining the Shape and Structure of Quadratic Functions | A.SSE.A. 1 |
|  | Quadratic Modeling | A.SSE.A. 2 |
|  | Quadratic Equation Solving | A.REI.B.4.b |
|  | Quadratic Transformations | A.REI.B.4.b |
| Operations with Complex Numbers | Introduction to Complex Numbers | F.BF.3 |
|  | Simplifying Radicals with Negative Radicands | N.CN.A. 1 |
|  | Simplifying Powers of $i$ | N.CN.A. 1 |
|  | Adding and Subtracting Complex Numbers | N.CN.A. 1 |
|  | Multiplying Complex Numbers | N.CN.A.2 |
|  | Solving Quadratic Equations with Complex Roots | N.CN.A. 2 |

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MODULE 3: Polynomial Functions

| Unit | Workspace | Standard |
| :---: | :---: | :---: |
| Power Functions | Exploring Cubic Functions | F.IF.C.7.c |
|  | Exploring Power Functions | A.APR. 1 F.IF.C.7.c |
|  | Building Functions on a Coordinate Plane | A.APR. 1 <br> F.BF.1.b |
| Graphs of Polynomial Functions | Classifying Polynomial Functions | F.IF.B. 4 |
|  | Interpreting Key Features of Graphs in Terms of Quantities | F.IF.B. 4 |
|  | Identifying Key Characteristics of Polynomial Functions | F.IF.B. 4 |
|  | Identify Zeros of Polynomials | A.APR.B. 3 |
|  | Use Zeros to Sketch a Graph of Polynomials | A.APR.B. 3 |
|  | Modeling Polynomials | F.IF.B. 5 |
|  | Estimating Rate of Change from a Graph | F.IF.B. 6 |
|  | Calculating and Interpreting Average Rate of Change | F.IF.B. 6 |
| Polynomial Operations | Adding Polynomials with Higher Orders | A.APR.A. 1 |
|  | Adding and Subtracting Standard Functions Types | F.BF.A.1.b |
|  | Multiplying Polynomials | A.APR.A. 1 |
|  | Polynomial Long Division | A.APR.C. 6 |
|  | Synthetic Division | A.APR.C. 6 |
| Solving Polynomials | Factoring Higher Order Polynomials | A.SSE.A. 2 |
|  | Applying the Remainder Theorem | A.APR.B. 2 |
|  | Polynomial Identities | A.APR.C. 4 |
|  | Solving Polynomial Inequalities | A.CED.A. 1 |
|  | Comparing Polynomial Functions in Different Forms | F.IF.C. 9 |

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## MODULE 4: Other Functions

| Unit | Workspace | Standard |
| :--- | :--- | :--- |
| Piecewise Functions | Introduction to Piecewise Functions | F.IF.C.7.b |
|  | Graphing Linear Piecewise Functions | F.IF.C.7.b |
|  | Using Linear Piecewise Functions | F.IF.C.7.b |
| Step Functions | Step Functions | F.IF.C.7.b |

## MODULE 5: Sequences and Series

| Unit | Workspace | Standard |
| :--- | :--- | :--- |
| Finite Geometric Series | Calculating the Sum of Finite Geometric Series | A.SSE.B.4 |
|  | Using the Formula for Finite Geometric Series | A.SSE.B.4 |


| MODULE 6: Rational Expressions and Functions |  |  |
| :---: | :---: | :---: |
| Unit | Workspace | Standard |
| Rational Functions | Introduction to Rational Functions | (+) F.IF.7.d |
|  | Modeling Ratios as Rational Functions | A.REI.A. 2 |
| Rational Expressions | Simplifying Rational Expressions | A.APR.D. 6 |
|  | Multiplying and Dividing Rational Expressions | A.APR.D. 6 |
|  | Adding and Subtracting Rational Expressions | A.APR.D. 6 |
| Rational Equations | Solving Rational Equations that Result in Linear Equations | A.REI.A. 2 |
|  | Solving Rational Equations that Result in Quadratic Equations | A.REI.A. 2 |
|  | Solving Rational Equations with Extraneous Solutions | A.REI.A. 2 |
| Rational Models and Independent Variables | Modeling Ratios as Rational Functions | A.APR.D. 6 |
|  | Using Rational Models | A.CED.A. 1 |
| Work, Mixture, and Distance Problems | Modeling with Rational Functions | A.CED.A. 1 |
|  | Modeling and Solving with Rational Functions | A.CED.A. 1 |

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MODULE 7: Inverse Functions

| Unit | Workspace | Standard |
| :--- | :--- | :---: |
| Inverses of Functions | Investigating Inverses of Power Functions | F.IF.C.7.b |
|  | Sketching Graphs of Inverses | F.B.B.4 |
|  | Calculating Inverses of Linear Functions | F.B.B.4.a |
|  | Graphing Square Root Functions | F.IF.C.7.b |
|  | Graphing Cube Root Functions | F.IF.C.7.b |


| MODULE 8: Radical Expressions |  |  |
| :--- | :--- | :--- |
| Unit | Workspace | Standard |
| Simplification and Operations with <br> Radicals | Simplifying Radicals | Adding and Subtracting Radicals |
|  | Multiplying Radicals | N.RN.A. 1 |
|  | Dividing Radicals | Simplifying Radicals with Variables |
|  | Adding and Subtracting Radicals with Variables | N.RN.A. 1 |
|  | Multiplying Radicals with Variables | N.RN.A. 1 |

## MODULE 9: Exponential Models

| Unit | Workspace | Standard |
| :--- | :--- | :--- |
| Exponential and Logarithmic Functions | Properties of Exponential Graphs | F.IF.C.7.e |
|  | Introduction to Logarithmic Functions | F.IF.C.7.e |
|  | Solving Base 2 and Base 10 Equations (No Type In) | F.LE.A.4 |
|  | Solving Base 2 and Base 10 Equations (Type In) | F.LE.A.4 |
|  | Solving Base e Equations (No Type In) | F.LE.A.4 |
|  | Solving Base e Equations (Type In) | F.LE.A.4 |
|  | Solving Any Base Equations (No Type In) | F.LE.A.4 |
|  | Solving Any Base Equations (Type In) | F.LE.A.4 |

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## MODULE 10: Trigonometric Functions

| Graphs of Trigonometric Functions | Workspace | Standard |
| :--- | :--- | :--- |
|  | Introduction to the Unit Circle | F.TF.A. 1 |
|  | Choosing Trigonometric Functions to Model Periodic Phenomena | F.TF.A. 2 |
| The Pythagorean Identity | Proving the Pythagorean Identity | F.TF.B. 5 |
|  | Using the Pythagorean Identity to Determine Sine, Cosine, or Tangent | F.TF.C. 8 |

## MODULE 11: Interpreting Data

Unit
Interpreting Data in Normal Distributions

| Workspace | Standard |
| :--- | :---: |
| Normal Distributions | S.ID.A. 4 |
| Z-Scores and Percentiles | S.ID.A.4 |
| Normal Distributions and Probability | S.ID.A. 4 |

