

ALGEBRA II SCOPE & SEQUENCE

UNIT 1: SEQUENCES & SERIES

2-3 Weeks

ESSENTIAL STANDARDS:

HSF.BF.A.2

- Write arithmetic and geometric sequences both recursively and with an explicit formula, and translate between the two forms
- Use arithmetic and geometric sequences to model situations

HSF.LE.A.2

Construct linear and exponential equations, including arithmetic and geometric sequences,

- given a graph
- a description of a relationship
- two input-output pairs (include reading these from a table)

SUPPORTING STANDARDS:

HSF.IF.A.3

UNIT 2: FUNCTIONS

6-7 Weeks

ESSENTIAL STANDARDS:

HSA.REI.C.6

Solve systems of equations algebraically and graphically

HSF.IF.B.4

For a function that models a relationship between two quantities:

- Interpret key features of graphs and tables in terms of the quantities, and
- Sketch graphs showing key features given a verbal description of the relationship

HSF.BF.B.3

- Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$ and $f(x + k)$ for specific values of k (k , a constant both positive and negative);
- Find the value of k given the graphs of the transformed functions

SUPPORTING STANDARDS:

HSN.Q.A.2

HSA.CED.A.3

HSA.REI.D.1

HSS.ID.B.6

HSA.CED.A.1

HSA.CED.A.4

HSA.REI.D.12

HSF.BF.B.4

HSA.CED.A.2

HSA.REI.C.5

HSF.IF.B.6

UNIT 3: QUADRATIC FUNCTIONS

4 Weeks

ESSENTIAL STANDARDS:

HSN.CN.C.7

Solve quadratic equations with real coefficients that have real or complex solutions

HSA.REI.B.4

Solve quadratic equations (as appropriate to the initial form of the equation) by:

- Inspection of a graph
- Taking square roots
- Completing the square
- Using the quadratic formula o Factoring

HSF.IF.B.4

For a function that models a relationship between two quantities:

- Interpret key features of graphs and tables in terms of the quantities, and
- Sketch graphs showing key features given a verbal description of the relationship

SUPPORTING STANDARDS:

HSF.IF.B.6
HSN.RN.B.4
HSN.Q.A.2
HSA.REI.C.7

HSN.CN.A.1
HSA.SSE.B.3
HSN.CN.A.2
HSN.CN.A.3

HSA.SSE.A.1
HSA.SSE.A.2
HSA.REI.A.1

HSF.BF.A.1
HSF.BF.B.3
HSF.BF.B.4

UNIT 4: POLYNOMIAL FUNCTIONS

5 Weeks

ESSENTIAL STANDARDS:

HSA.APR.A.1

- Add, subtract, and multiply polynomials
- Understand that polynomials, like the integers, are closed under addition, subtraction, and multiplication

HSA.APR.B.3

- Identify zeros of polynomials when suitable factorizations are available
- Use the zeros to construct a rough graph of the function defined by the polynomial

HSF.IF.B.4

For a function that models a relationship between two quantities:

- Interpret key features of graphs and tables in terms of the quantities, and
- Sketch graphs showing key features given a verbal description of the relationship

HSF.IF.C.7

Graph functions expressed algebraically and show key features of the graph, with and without technology:

- Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior

HSF.BF.B.4

- Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$ and $f(x + k)$ for specific values of k (k , a constant both positive and negative);
- Find the value of k given the graphs of the transformed functions

SUPPORTING STANDARDS:

HSN.Q.A.2

HSA.SSE.B.3

HSA.REI.A.1

HSF.IF.C.8

HSA.SSE.A.1

HSA.APR.B.2

HSA.REI.D.11

HSF.BF.A.1

HSA.SSE.A.2

HSA.APR.C.4

HSF.IF.B.6

HSF.BF.B.3

UNIT 5: EXPONENTIAL/LOGARITHMIC FUNCTIONS

5 Weeks

ESSENTIAL STANDARDS:

HSA.CED.A.1

Create equations and inequalities in one variable and use them to solve problems

HSF.IF.B.4

For a function that models a relationship between two quantities:

- Interpret key features of graphs and tables in terms of the quantities,
- Sketch graphs showing key features given a verbal description of the relationship

HSF.IF.C.8

Use the properties of exponents to interpret expressions for exponential functions

HSF.BF.A.1

Write a function that describes a relationship between two quantities

HSF.LE.A.2

Construct linear and exponential equations, including arithmetic and geometric sequences,

- given a graph,
- a description of a relationship, or
- two input-output pairs

HSF.LE.A.4

- Express exponential models as logarithms
- Express logarithmic models as exponentials
- Use properties of logarithms to simplify and evaluate logarithmic expressions (expanding and/or condensing logarithms as appropriate)
- Evaluate logarithms with or without technology

SUPPORTING STANDARDS:

HSN.RN.A.1

HSA.SSE.A.2

HSF.IF.C.7

HSF.IF.B.6

HSN.Q.A.2

HSA.REI.D.11

HSF.BF.B.4

HSF.BF.B.5

HSA.SSE.A.1

UNIT 6: RADICAL FUNCTIONS

4 Weeks

ESSENTIAL STANDARDS:

HSN.RN.B.4

- Simplify radical expressions
- Perform operations (add, subtract, multiply, and divide) with radical expressions
- Rationalize denominators and/or numerators

HSA.REI.A.2

Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise

SUPPORTING STANDARDS:

HSF.BF.A.1

HSF.IF.B.5

HSF.RN.B.4

HSF.BF.B.3

HSF.BF.B.4

UNIT 7: RATIONAL FUNCTIONS

4-5 Weeks

ESSENTIAL STANDARDS:

HSA.APR.D.7

- Add, subtract, multiply, and divide by nonzero rational expressions
- Understand that rational expressions, like the integers, are closed under addition, subtraction, and multiplication

HSA.REI.A.2

Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise

SUPPORTING STANDARDS:

HSN.Q.A.2

HSA.APR.D.6

HSA.REI.A.1

HSF.IF.B.4

HSA.SSE.A.2

HSA.CED.A.1

HSA.REI.D.11

HSF.BF.B.4

UNIT 8: DATA ANALYTICS

4-5 Weeks

ESSENTIAL STANDARDS:

HSS.ID.B.6

Represent data on two quantitative variables on a scatter plot, and describe how the variables are related

- Fit a function to the data; use functions fitted to data to solve problems in the context of the data

HSS.IC.B.6

Read and explain, in context, the validity of data from outside reports by

- Identifying the variables as quantitative or categorical.
- Describing how the data was collected.
- Indicating any potential biases or flaws.
- Identifying inferences the author of the report made from sample data

SUPPORTING STANDARDS:

HSN.Q.A.2

HSS.IC.A.1

HSS.IC.B.3

HSS.ID.A.4

HSS.IC.A.2