

11022 Trigonometry (3)

Acquire critical thinking and problem solving skills

Demonstrate a deep understanding of periodic functions. This includes trigonometric functions whether they are described verbally, numerically, graphically, pictorially, geometrically, or algebraically.

Analyze functions. Routine analysis includes discussion of domain, range, zeros, and general function behavior (increasing, decreasing, extrema, etc.), as well as periodic characteristics such as period, frequency, phase shift, and amplitude with emphasis on functions derived from the geometry of the unit circle.

Be proficient at solving a wide array of equations and inequalities involving trigonometric functions.

Demonstrate a deep understanding of the measurements of right triangles, right triangles as building blocks of general triangles, and right triangles as a bridge between circular measurements and rectangular measurements.

Apply principles of effective written and oral communication

Articulate reasons for choosing a particular process, recognize function families and anticipate behavior, and explain the implementation of a process.

Recognize function construction/algebra as it appears in equations and inequalities and choose an appropriate solution method, as well as communicate reasons for that choice.

Use correct, consistent, and coherent notation throughout the solution process to a given equation or inequality.

Distinguish between exact and approximate solutions and which solution methodologies result in which kind of solutions.

Demonstrate an understanding of the algebraic, functional, and geometric views of equation solutions. Solutions to equations can represent numbers satisfying an equation, zeros of a function, and intersection points of two curves.

Cite domain restrictions resulting from solution decisions and situation restrictions and reflect these in solution set descriptions.

Demonstrate a proficiency at reasoning mathematically.

Recognize when a result (theorem) is applicable and use the result to make sound logical conclusions and to provide counter-examples to conjectures.

Broaden their imagination and develop their creativity

Be proficient in creating equivalencies in order to simplify expressions, solve equations and inequalities, or take advantage of a common structure or form.

Purposefully create equivalences and indicate where they are valid.

Recognize opportunities to create equivalencies in order to simplify workflow.

Become Fluent with conversions using traditional equivalency families. [e.g., Pythagorean, sums/differences, double angles]

Strengthen quantitative reasoning skills

Modeling with Functions:

Interpret the function correspondence and behavior of a given model in terms of the context of the model.

Create periodic models from data.

Determine parameters of a model given the form of the model and data.

Determine a reasonable applied domain for the model, as well as articulate the limitations of the model.