

## Accelerated Mathematics III Standards Overview for Parents

Standard	Description of the Georgia Performance Standard
	<b>Algebra</b>
MA3A1a (domain)	Investigate and explain domain of rational functions
MA3A1a (range)	Investigate and explain range of rational functions
MA3A1a (zeros)	Investigate and explain zeros of rational functions
MA3A1a (points of discontinuity)	Investigate and explain points of discontinuity of rational functions
MA3A1a (increase/decrease)	Investigate and explain intervals of increase or decrease of rational functions
MA3A1a (rates of change)	Investigate and explain rates of change of rational functions
MA3A1a (extrema)	Investigate and explain extrema of rational functions
MA3A1a (symmetry)	Investigate and explain symmetry of rational functions
MA3A1a (asymptotes)	Investigate and explain asymptotes of rational functions
MA3A1a (end behavior)	Investigate and explain end behavior of rational functions
MA3A1b	Find inverses of rational functions, discussing domain and range, symmetry and function composition
MA3A1c (equations)	Solve rational equations analytically, graphically and by using appropriate technology
MA3A1c (inequalities)	Solve rational inequalities analytically, graphically and by using appropriate technology
MA3A2a	Define and understand angles measured in degrees and radians, including but not limited to $0^\circ$ , $30^\circ$ , $45^\circ$ , $60^\circ$ , $90^\circ$ , their multiples and equivalences
MA3A2b	Understand and apply the six trigonometric functions as functions of general angles in standard position
MA3A2c	Find values of trigonometric functions using points on the terminal sides of angles in standard position
MA3A2d	Understand and apply the six trigonometric functions as functions of arc length on the unit circle
MA3A2e	Find values of trigonometric functions using the unit circle
MA3A3a	Understand and apply the six basic trigonometric functions as functions of real numbers (graphing)
MA3A3b (amplitude)	Investigate and explain amplitude of the six basic trigonometric functions and their transformations
MA3A3b (period)	Investigate and explain period of the six basic trigonometric functions and their transformations
MA3A3b (phase shift)	Investigate and explain phase shift of the six basic trigonometric functions and their transformations
MA3A3b (vertical shift)	Investigate and explain vertical shift of the six basic trigonometric functions and their transformations
MA3A3b (domain)	Investigate and explain domain of the six basic trigonometric functions and their transformations
MA3A3b (range)	Investigate and explain range of the six basic trigonometric functions and their transformations
MA3A3b (zeros)	Investigate and explain zeros and intercepts of the six basic trigonometric functions and their transformations
MA3A3b (extrema)	Investigate and explain extrema of the six basic trigonometric functions and their transformations
MA3A3b (points of discontinuity)	Investigate and explain points of discontinuity of the six basic trigonometric functions and their transformations
MA3A3b (increase/decrease)	Investigate and explain intervals of increase or decrease of the six basic trigonometric functions and their transformations
MA3A3b (rates of change)	Investigate and explain rates of change of the six basic trigonometric functions and their transformations
MA3A3c	Graph transformations of trigonometric functions including changing period, amplitude, phase shift and vertical shift
MA3A3d	Apply graphs of trigonometric functions in realistic contexts involving periodic phenomena
MA3A4a	Compare and contrast properties of functions within and across the following types: linear, quadratic, polynomial, power, rational, exponential, logarithmic, trigonometric and piecewise
MA3A4b	Investigate transformations of functions
MA3A4c	Investigate characteristics of functions built through sum, difference, product, quotient and composition
MA3A5 (establish)	Students will establish the following identities: $\tan\theta = \frac{\sin\theta}{\cos\theta}$ , $\cot\theta = \frac{\cos\theta}{\sin\theta}$ , $\sec\theta = \frac{1}{\cos\theta}$ , $\csc\theta = \frac{1}{\sin\theta}$ , $\sin^2\theta + \cos^2\theta = 1$ , $\cot^2\theta + 1 = \csc^2\theta$ , $\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$ , $\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$ , $\sin(2\theta) = 2\sin\theta\cos\theta$ , $\cos(2\theta) = \cos^2\theta - \sin^2\theta$
MA3A5 (simplify)	Students will simplify the following identities: $\tan\theta = \frac{\sin\theta}{\cos\theta}$ , $\cot\theta = \frac{\cos\theta}{\sin\theta}$ , $\sec\theta = \frac{1}{\cos\theta}$ , $\csc\theta = \frac{1}{\sin\theta}$ , $\sin^2\theta + \cos^2\theta = 1$ , $\cot^2\theta + 1 = \csc^2\theta$ , $\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$ , $\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$ , $\sin(2\theta) = 2\sin\theta\cos\theta$ , $\cos(2\theta) = \cos^2\theta - \sin^2\theta$
MA3A5 (verify)	Students will verify the following identities: $\tan\theta = \frac{\sin\theta}{\cos\theta}$ , $\cot\theta = \frac{\cos\theta}{\sin\theta}$ , $\sec\theta = \frac{1}{\cos\theta}$ , $\csc\theta = \frac{1}{\sin\theta}$ , $\sin^2\theta + \cos^2\theta = 1$ , $\cot^2\theta + 1 = \csc^2\theta$ , $\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$ , $\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$ , $\sin(2\theta) = 2\sin\theta\cos\theta$ , $\cos(2\theta) = \cos^2\theta - \sin^2\theta$
MA3A6a	Solve trigonometric equations over a variety of domains, using technology as appropriate
MA3A6b	Use the coordinates of a point on a terminal side of an angle to express $x$ as $r\cos\theta$ and $y$ as $r\sin\theta$
MA3A6c (sines)	Apply the law of sines
MA3A6c (cosines)	Apply the law of cosines
MA3A7	Verify and apply $\frac{1}{2}ab\sin C$ to find the area of a triangle
MA3A8a	Find values of inverse sine, inverse cosine and inverse tangent functions using technology as appropriate
MA3A8b	Determine characteristics of the inverse trigonometric functions and their graphs
MA3A9a (recursive)	Use and find recursive formulae for the terms of sequences
MA3A9a (explicit)	Use and find explicit formulae for the terms of sequences
MA3A9b (arithmetic)	Recognize and use simple arithmetic sequences

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MA3A9b (geometric)	Recognize and use simple geometric sequences
MA3A9c	Investigate limit of sequences
MA3A9d	Use mathematical induction to find and prove formulae for sums of finite series
MA3A9e	Find and apply the sums of finite and, where appropriate, infinite arithmetic and geometric sequences
MA3A9f	Use summation notation to explore series
MA3A9g	Determine geometric series and their limits
MA3A10a	Represent vectors algebraically and geometrically
MA3A10b	Covert between vectors expressed using rectangular coordinates and vectors expressed using magnitude and direction
MA3A10c (add)	Add vectors
MA3A10c (subtract)	Subtract vectors
MA3A10c (scalar multiples)	Compute scalar multiples of vectors
MA3A10d	Use vectors to solve realistic problems
MA3A11a	Represent complex numbers in trigonometric form
MA3A11b	Find products, quotients, powers and roots of complex numbers in trigonometric form
MA3A12a	Convert between Cartesian and parametric form
MA3A12b	Graph equations in parametric form showing direction and beginning and ending points where appropriate
MA3A13a	Express coordinates of points in rectangular and polar forms
MA3A13b	Graph and identify characteristics of simple polar equations including lines, circles, cardioids, limacons and roses
<b>Data Analysis</b>	
MA3D1	Using simulation, develop the idea of the central limit theorem
MA3D2	Using student generated data from random samples of at least 30 members, determine the margin of error and confidence interval for a specified level of confidence
MA3D3	Use confidence intervals and margin of error to make inferences from data about a population