

Pre-Calculus

Semester 1

- 1. PreCalc.M.RFR.AF.01:** I can calculate, interpret, and use average rate of change given a function mathematically or as a model. I can use the parameters of the function to define and limit domain and range given a graph, a model, or an equation.
- 2. PreCalc.M.RFR.AF.02:** I can graph any function using the parent function, the 'a' value, and the horizontal and vertical shifts. I can use the function parameters to describe the function's behavior, including domain, range, asymptotic behavior, and end behavior.
- 3. PreCalc.M.RFR.AF.03:** I can identify key features of a function from a graph, a table, or an equation. I can evaluate a function at a point using multiple representations of the function.
- 4. PreCalc.M.RFR.AF.04:** I can use determine the asymptotes of a function algebraically and graphically. I can use limit notation to describe the behavior of the function as it approaches the asymptotes and infinity.
- 5. PreCalc.M.RFR.BF.01:** I can model real-world situations with the sum, difference, product, or quotient of other function models.
- 6. PreCalc.M.RFR.BF.02:** I can compose functions that describe relationships between two quantities.
- 7. PreCalc.M.RFR.BF.03:** I can combine two functions by applying them in order.
- 8. PreCalc.M.RFR.BF.04:** I can find an inverse of a function algebraically.
- 9. PreCalc.M.RFR.BF.05:** I can describe the meaning of given a function that takes hours as an input and gives miles as an output. I can make sense of the covarying quantities when modeling with inverse functions.
- 10. PreCalc.M.RFR.BF.06:** I can use algebra to find an inverse function.
- 11. PreCalc.M.RM.UM.01:** I can use matrices to represent and manipulate data.
- 12. PreCalc.M.RM.UM.02:** I can use matrix operations to solve problems. I can add, subtract, and multiply matrices of appropriate dimensions. I can multiply matrices by scalars to produce new matrices.
- 13. PreCalc.M.RM.UM.03:** I can find the inverse and determinant of a matrix.
- 14. PreCalc.M.RM.UM.04:** I can rewrite a system of equations using a matrix, and can apply technology to solve a system of linear equations using the inverse matrix.
- 15. PreCalc.M.RFR.ISS.01:** I can work with arithmetic sequences and series. I can work with geometric sequences and series.

- 16. PreCalc.M.RFR.ISS.02:** I can use relationships between variables to model how they vary together. I can write a non-arithmetic or non-geometric sequence.
- 17. PreCalc.M.RFR.ISS.03:** I can represent finite or infinite series using sigma notation.
- 18. PreCalc.M.RFR.ISS.04:** I can find the sums of finite or infinite series, if they exist.

Semester 2 Standards

- 1. PreCalc.M.RFR.AF.05:** I can graph trigonometric functions, showing period, midline, and amplitude.
- 2. PreCalc.M.RFR.IC.01:** I can apply the concepts of conics in the real world.
- 3. PreCalc.M.RFR.IC.02:** I can compare and contrast the key features of conics such as foci, directrix, transverse and conjugate, vertices, center, axis of symmetry and latus rectum.
- 4. PreCalc.M.RFR.IC.03:** I can sketch the graph of a circle, a parabola, an ellipse, and a hyperbola using the key features: foci, directrix, transverse and conjugate, vertices, center, axis of symmetry and latus rectum.
- 5. PreCalc.M.RFR.IC.04:** I can create the equation of a conic section using the key features: foci, directrix, transverse and conjugate, vertices, center, asymptotes, axis of symmetry and latus rectum.
- 6. PreCalc.M.RFR.IC.05:** I can use the method of completing the square to put the equation of the conic sections into standard form and identify whether it is an ellipse, a hyperbola, a parabola or a circle.
- 7. PreCalc.M.RV.EV.01:** I can recognize vector quantities as having both magnitude and direction.
- 8. PreCalc.M.RV.EV.02:** I can represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes.
- 9. PreCalc.M.RV.EV.03:** I can find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
- 10. PreCalc.M.RV.EV.04:** I can solve problems involving velocity and other quantities that can be represented by vectors.
- 11. PreCalc.M.RV.EV.05:** I can add and subtract vectors, and multiply a vector by a scalar.
- 12. PreCalc.M.RT.EPE.01:** I can convert a point from rectangular to polar form, and a point from polar to rectangular form. I can determine equivalent polar representations from a given point, and graph polar equations using a table of values and graphing devices.

- 13. PreCalc.M.RT.EPE.02:** I can analyze graphs of polar equations and look for patterns in their behavior including but not limited to the number of petals in the rose, symmetry, intersection points for two or more polar graphs, and the required domain to complete the graph. I can reconcile preconceived notions of graphs in rectangular form with graphs in polar form. For example: the vertical line test, the meaning of constant rate of change/linearity.
- 14. PreCalc.M.RT.EPE.03:** I can use polar equations to solve problems.
- 15. PreCalc.M.RT.RTS.01:** I can rewrite a trigonometric expression using algebraic properties and trigonometric identities.
- 16. PreCalc.M.RT.RTS.02:** I can use trigonometric formulas to rewrite and evaluate trigonometric expressions and equations.
- 17. PreCalc.M.RT.RTS.03:** I can solve trigonometric equations.
- 18. PreCalc.M.RT.ETT.01:** I can use trigonometry to solve real-world problems.
- 19. PreCalc.M.RT.ETT.02:** I can apply the Law of Sines and the Law of Cosines to solve problems.
- 20. PreCalc.M.RT.ETT.03:** I can use trigonometry to find the area of triangles.
- 21. PreCalc.M.RT.ETT.04:** I can solve problems using special triangles and the unit circle to obtain exact answers.
- 22. PreCalc.M.RT.ETT.05:** I can use the unit circle to explain symmetry and periodicity of trigonometric functions.
- 23. PreCalc.M.RT.ETT.06:** I can use inverse trigonometric functions to solve real-world problems and interpret the solution in the context of the problem.
- 24. PreCalc.M.RV.MP.01:** I can model real-world contexts with parametric equations.
- 25. PreCalc.M.RV.MP.02:** I can use parametric equations to solve problems.
- 26. PreCalc.M.RV.MP.03:** I can graph parametric equations and identify orientation.
- 27. PreCalc.M.RV.MP.04:** I can analyze and interpret the graphs of parametric equations.