Honors Precalculus:
Solving equations and inequalities graphically and algebraically

I can…

Learning Target	Book Section
1. Solve polynomial equations.	
2. Solve equations involving radicals, fractions, or absolute values.	
3. Solve linear, absolute value, polynomial, and rational inequalities.	
4. Use inequalities to model and solve real-life problems.	
5. Find solutions of equations graphically.	

Honors Precalculus:
Write, graph, analyze, model and use properties of functions

I can…

Learning Target	Book Section
1. Find the slope of a line.	1.1
2. Write linear equations given points on lines and their slopes.	1.1
3. Use slope-intercept forms of linear equations to sketch graphs of lines.	1.1
4. Use slope to identify parallel and perpendicular lines.	1.1
5. Find x- and y- intercepts of graphs of equations.	1.1
6. Decide whether relations between two variables are functions.	1.2
7. Use function notation and evaluate functions.	1.2
8. Find domains and ranges of functions.	1.3
9. Use functions to model and solve real-life problems.	1.2
10. Use the Vertical Line Test for functions.	1.3
11. Determine intervals on which functions are increasing or decreasing.	1.3
12. Determine relative minimum and maximum values of functions.	1.3
13. Graph step functions and other piecewise functions.	1.3
14. Identify even and odd functions.	1.3
15. Recognize graphs of common functions.	1.4
16. Use vertical and horizontal shifts to sketch graphs of functions.	1.4
17. Use reflections to sketch graphs of functions.	1.4
18. Use nonrigid transformations to sketch graphs of functions.	1.4
19. Add, subtract, multiply, & divide functions.	1.5
20. Find compositions of one function with another function.	1.5
21. Use combinations of functions to model and solve real-life problems.	1.5
22. Find inverse functions informally and verify that two functions are inverses of each other.	1.6
23. Use graphs of functions to decide whether functions have inverses.	1.6
24. Find inverse functions algebraically.	1.6
25. Construct scatterplots and interpret correlation.	1.7
26. Represent data graphically using scatter plots, bar graphs, & line graphs.	1.7
27. Uses scatterplots and graphing calculators to find linear models for data.	1.7

Honors Precalculus:
Write, graph, analyze, model and use properties of Polynomial and Rational functions

I can…

Learning Target	Book Section
1. Analyze graphs of quadratic functions.	2.1
2. Write quadratic functions in standard form & graph them.	2.1
3. Use quadratic functions to model and solve real-life problems.	2.1
4. Use transformations to sketch graphs of polynomial functions.	2.2
5. Use the Leading Coefficient Test to determine the end behavior of graphs of polynomial functions.	2.2
6. Find and use zeros of polynomial functions to sketch their graphs.	2.2
7. Use the Intermediate Value Theorem to help locate zeros of polynomial functions.	2.2
8. Use long division and synthetic division to divide polynomials.	2.3
9. Use the Remainder Theorem and the Factor Theorem.	2.3
10. Use the Rational Zero Test to determine possible rational zeros.	2.3
11. Determine upper and lower bounds for zeros of polynomial functions.	2.3
12. Use the imaginary unit i to write complex numbers.	2.4
13. Add, subtract, multiply, and divide complex numbers.	2.4
14. Plot complex numbers in the complex plane.	2.4
15. Use the Fundamental Theorem of Algebra to determine the number of zeros of polynomial functions.	2.5
16. Find all the zeros of polynomial functions, including complex zeros.	2.5
17. Find conjugate pairs of complex zeros.	2.5
18. Find zeros of polynomial functions by factoring.	2.5
19. Find domains of rational functions.	2.6
20. Find horizontal and vertical asymptotes of graphs of rational functions.	2.6
21. Use rational functions to model and solve real-life problems.	2.6
22. Analyze and sketch graphs of rational functions.	2.7
23. Decide whether graphs of rational functions have slant asymptotes and find them if they exist.	2.7
24. Classify scatterplots, find Quadratic models for data, and choose the best fit model	2.8

Honors Precalculus:
Write, graph, analyze, model and use properties of exponential and logarithmic functions

I can…

Learning Target	Book Section
1. Recognize and evaluate exponential functions with base a	3.1
2. Graph exponential functions and use the One-to-One Property	3.1
3. Recognize, evaluate, and graph exponential functions with base e	3.1
4. Use exponential functions to model and solve real-life problems	3.1
5. Recognize and evaluate logarithmic functions with base a	3.2
6. Graph logarithmic functions	3.2
7. Recognize, evaluate, and graph natural logarithmic functions	3.2
8. Use logarithmic functions to model and solve real-life problems	3.2
9. Use the change-of-base formula to rewrite and evaluate logarithmic expressions	3.3
10. Use properties of logarithms to evaluate or rewrite logarithmic expressions	3.3
11. Use properties of logarithms to expand or condense logarithmic expressions	3.3
12. Use logarithmic functions to model and solve real-life problems	3.3
13. Solve simple exponential and logarithmic equations	3.4
14. Solve more complicated exponential & logarithmic equations	3.4
15. Use exponential and logarithmic equations to model and solve real-life problems	3.4
16. Recognize the five most common types of models involving exponential and logarithmic functions	3.5
17. Use exponential growth and decay functions to model and solve real-life problems	3.5
18. Use Gaussian functions to model and solve real-life problems	3.5
19. Use logistic growth functions to model and solve real-life problems	3.5
20. Use logarithmic functions to model and solve real-life problems	3.5
21. Fit exponential and logarithmic models to sets of data.	3.5
22. Classify scatterplots, use graphing calculator to find a best fit model for the data.	3.6

Honors Precalculus:
Evaluate, graph, and solve problems using the trigonometric functions, their inverses, and reciprocals

I can…

Learning Target	Book Section
1. Describe angles	4.1
2. Use radian and degree measure	4.1
3. Use angles to model and solve real-life problems	4.1
4. Identify a unit circle and describe its relationship to real numbers	4.2
5. Evaluate trigonometric functions using the unit circle	4.2
6. Use domain and period to evaluate sine and cosine functions	4.2
7. Use a calculator to evaluate trigonometric functions	4.2
8. Evaluate trigonometric functions of acute angles	4.3
9. Use the fundamental trigonometric identities	4.3
10. Use a calculator to evaluate trigonometric functions	4.3
11. Use trigonometric functions to model and solve real-life problems	4.3
12. Evaluate trigonometric functions of any angle	4.4
13. Use reference angles to evaluate trigonometric functions	4.4
14. Evaluate trigonometric functions of real numbers	4.4
15. Use amplitude and period to help sketch the graphs of sine and cosine functions	4.5
16. Sketch translations of the graphs of sine and cosine functions	4.5
17. Use sine and cosine functions to model real-life data	4.5
18. Sketch the graphs of tangent and cotangent functions	4.6
19. Sketch the graphs of secant and cosecant functions	4.6
20. Sketch the graphs of damped trigonometric functions	4.6
21. Evaluate and graph the inverse sine function	4.7
22. Evaluate and graph the other inverse trigonometric functions	4.7
23. Evaluate compositions of trigonometric functions	4.7
24. Solve real-life problems involving right triangles	4.8
25. Solve real-life problems involving directional bearings	4.8
26. Solve real-life problems involving harmonic motion	4.8

Honors Precalculus:
Simplify expressions and solve equations by using trigonometric identities

I can…

Learning Target	Book Section
1. Recognize and write the fundamental trigonometric identities	5.1
2. Use the fundamental trigonometric identities to evaluate, simplify, and rewrite trigonometric expressions	5.1
3. Verify trigonometric identities	5.2
4. Use standard algebraic techniques to solve trigonometric equations	5.3
5. Solve trigonometric equations of quadratic type	5.3
6. Solve trigonometric equations involving multiple angles	5.3
7. Use inverse trigonometric functions to solve trigonometric equations	5.3
8. Use sum and difference formulas to evaluate trigonometric functions, verify identities, and solve trigonometric equations	5.4
9. Use multiple-angle formulas to rewrite and evaluate trigonometric functions	5.5
10. Use power-reducing formulas to rewrite and evaluate trigonometric functions	5.5
11. Use half-angle formulas to rewrite and evaluate trigonometric functions	5.5
12. Use product-to-sum and sum-to-product formulas to rewrite and evaluate trigonometric functions	5.5
13. Use trigonometric formulas to rewrite real-life models	5.5

Honors Precalculus:
Apply trigonometry to oblique triangles, vectors, and complex numbers

I can…

Learning Target	Book Section
1. Use the Law of Sines to solve oblique triangles (ASA, AAS, or SSA)	6.1
2. Find areas of oblique triangles	6.1
3. Use the Law of Sines to model and solve real-life problems	6.1
4. Use the Law of Cosines to solve oblique triangles (SSS or SAS)	6.2
5. Use the Law of Cosines to model and solve real-life problems	6.2
6. Use Heron's Area Formula to find areas of triangles	6.2
7. Represent vectors as directed line segments	6.3
8. Write the component forms of vectors	6.3
9. Perform basic vector operations and represent vectors graphically	6.3
10. Write vectors as linear combinations of unit vectors	6.3
11. Find the direction angles of vectors	6.3
12. Use vectors to model and solve real-life problems	6.3
13. Find the dot product of two vectors and use the properties of the dot product	6.4
14. Find the angle between two vectors and determine whether two vectors are orthogonal	6.4
15. Write vectors as sums of two vector components	6.4
16. Use vectors to find the work done by a force	6.4
17. Plot complex numbers in the complex plane and find absolute values of complex numbers	6.5
18. Write the trigonometric forms of complex numbers	6.5
19. Multiply and divide complex numbers written in trigonometric form	6.5
20. Use DeMoivre's Theorem to find powers of complex numbers	6.5
21. Find nth roots of complex numbers	6.5

Honors Precalculus:
Solve systems of equations and inequalities

I can…

Learning Target	Book Section
1. Use the method of substitution to solve systems of linear equations in two variables	7.1
2. Use the method of substitution to solve systems of nonlinear equations in two variables	7.1
3. Use a graphical approach to solve systems of equations in two variables	7.1
4. Use systems of equations to model and solve real-life problems	7.1
5. Use the method of elimination to solve systems of linear equations in two variables	7.2
6. Interpret graphically the numbers of solutions of systems of linear equations in two variables	7.2
7. Use systems of linear equations in two variables to model and solve real-life problems	7.2
8. Use back-substitution to solve linear systems in row-echelon form	7.3
9. Use Gaussian elimination to solve systems of linear equations	7.3
10. Solve non-square systems of linear equations	7.3
11. Use systems of linear equations in three or more variables to model and solve real-life problems	7.3
12. Recognize partial fraction decompositions of rational expressions	7.3
13. Find partial fraction decompositions of rational expressions	7.3

Honors Precalculus:
Analyze sequences and series, expand binomials, and determine the probability of events

I can…

Learning Target	Book Section
1. Use sequence notation to write the terms of sequences	8.1
2. Use factorial notation	8.1
3. Use summation notation to write sums	8.1
4. Find the sums of infinite series	8.1
5. Use sequences and series to model and solve real-life problems	8.1
6. Recognize, write, and find the nth terms of arithmetic sequences	8.2
7. Find nth partial sums of arithmetic sequences	8.2
8. Use arithmetic sequences to model and solve real-life problems	8.2
9. Recognize, write, and find the nth terms of geometric sequences	8.3
10. Find nth partial sums of geometric sequences	8.3
11. Find sums of infinite geometric series	8.3
12. Use geometric sequences to model and solve real-life problems	8.3
13. Use mathematical induction to prove statements involving a positive integer	Appendix
14. Use the Binomial Theorem to calculate binomial coefficients	8.4
15. Use Pascal's Triangle to calculate binomial coefficients	8.4
16. Use binomial coefficients to write binomial expansions	8.4
17. Solve simple counting problems	8.5
18. Use the Fundamental Counting Principle to solve counting problems	8.5
19. Use permutations to solve counting problems	8.5
20. Use combinations to solve counting problems	8.5
21. Find the probabilities of events	8.6
22. Find the probabilities of mutually exclusive events	8.6
23. Find the probabilities of independent events	8.6
24. Find the probability of the complement of an event	8.6
25. Statistics	
26. Statistics	
27. Statistics	
28. Statistics	

Honors Precalculus:
Work with conic sections and equations in parametric and polar form

I can…

Learning Target	Book Section
1. Recognize a conic as the intersection of a plane and a double-napped cone	9.1
2. Write the equations of parabolas in standard form and graph parabolas	9.1
3. Use the reflective property of parabolas to solve real-life problems	9.1
4. Write equations of ellipses in standard form and graph ellipses	9.2
5. Use properties of ellipses to model and solve real-life problems	9.2
6. Find the eccentricities of ellipses	9.2
7. Write equations of hyperbolas in standard form	9.3
8. Find asymptotes of and graph hyperbolas	9.3
9. Use properties of hyperbolas to solve real-life problems	9.3
10. Classify conics from their general equations	9.3
11. Rotate the coordinate axes to eliminate the xy-term in equations of conics	9.3
12. Use the discriminant to classify conics	9.3
13. Evaluate sets of parametric equations for given values of the parameter	9.4
14. Sketch curves represented by sets of parametric equations and rewrite the equations as single rectangular equations	9.4
15. Find sets of parametric equations for graphs	9.4
16. Plot points on the polar coordinate system	9.5
17. Convert points from rectangular to polar form and vice versa	9.5
18. Convert equations from rectangular to polar form and vice versa	9.5
19. Graph polar equations by point plotting	9.6
20. Use symmetry, zeros, and maximum r-values to sketch graphs of polar equations	9.6
21. Recognize special polar graphs	9.6
22. Define conics in terms of eccentricity and write and graph equations of conics in polar form	9.7
23. Use equations of conics in polar form to model real-life problems	9.7

Honors Precalculus:
Find limits of a graph, slope of a graph and calculate the derivative of a function

I can…

Learning Target	Book Section
1. Use the definition of a limit to estimate limits	11.1
2. Determine whether limits of functions exist	11.1
3. Use properties of limits and direct substitution to evaluate limits	11.1
4. Use the dividing out technique to evaluate limits fo functions	11.2
5. Use the rationalizing technique to evaluate limits of functions	11.2
6. Approximate limits of functions graphically and numerically	11.2
7. Evaluate one-sided limits of functions	11.2
8. Evaluate limits of difference quotients from calculus	11.2
9. Use a tangent line to approximate the slope of a graph at a point	11.3
10. Use the limit definition of slope to find exact slopes of graphs	11.3
11. Find derivatives of functions and use derivatives to find slopes of graphs	11.3
12. Evaluate limits of functions at infinity	11.4
13. Find limits of sequences	11.4
14. Find limits of summations	11.4
15. Use rectangles to approximate areas of plane regions	11.5
16. Use limits of summations to find areas of plane regions	11.5