

Mathematics Curriculum

| Subject Area: Honors Trigonometry and Pre-Calculus 11-12 (Dual-Enrollment) | | | | | |
|--|--|-------------------|--------------------|--|--|
| CCSS Conceptual Category: Number and Quantity | | | | | |
| CCSS Domain: The Complex Number System (N-CN) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| <i>The students will:</i> | | | | | |
| Perform arithmetic operations with complex numbers | <p>1. know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.</p> <p>2. use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.</p> <p>3. (+) find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.</p> | 3.4, 3.5 | Strategic Thinking | <p>1. Given $a+4i=7-bi$ find a and b.</p> <p>2. Simplify $(3-2i)(2+4i)$</p> <p>3. Simplify $(5+2i)/(3-i)$</p> | <p>1. Given $(x+2)+5i=3+8yi$ solve for x and y.</p> <p>2. Simplify $(5+8i)(5-8i)$</p> <p>3. Simplify $(2+3i)/(2-i)$ (SMP 2,6,7,8)</p> |

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| <i>The students will:</i> | | | | | |
| Represent complex numbers and their operations on the complex plane | <p>4. (+) represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.</p> <p>5. (+) represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.</p> <p>6. (+) calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.</p> | 3.4, 3.5 | Strategic Thinking | <p>4. Graph $4+5i$ in the complex coordinate plane.</p> <p>5. Given $(-2+i)^5$ find the modulus and the argument.</p> <p>6. Find the distance between $(3-i)$ and $(2+i)$.</p> | <p>4. Determine which quadrant $4+5i$ is located in.</p> <p>5. Know that $(-1 + \sqrt{3} i)^3 = 8$ because $(-1 + \sqrt{3} i)$ has modulus 2 and argument 120°.</p> <p>6. Find the midpoint of $(3-i)$ and $(2+i)$ (SMP 2,5,7)</p> |

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|---|--|--------------------------|--------------------|--|--|
| CCSS Conceptual Category: Number and Quantity | | | | | |
| CCSS Domain: Vector and Matrix Quantities (N-VM) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| <i>The students will:</i> | | | | | |
| Represent and model with vector quantities | <p>1. (+) recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments.</p> <p>2. (+) find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.</p> <p>3. (+) solve problems involving velocity and other quantities that can be represented by vectors.</p> | 1.5, 1.8 | Strategic Thinking | <p>1. Given vector $u=(-1,3)$ and vector $v=(2,4)$ find $u+v$.</p> <p>2. Given the initial vector $(3,4)$ and the terminal vector $(7,8)$ find the resulting component vector.</p> <p>3. A ball is thrown with an initial velocity of 70 ft/sec, at an angle of 35° with the horizontal. Find the vertical and horizontal components of the velocity.</p> | <p>1. Use appropriate symbols for vectors and their magnitudes (e.g., v, v, $\ v\$, v).</p> <p>2. Given the initial vector $(5,6)$ and the terminal vector $(12,15)$ find the resulting component vector.</p> <p>3. A gun with a muzzle velocity of 1200 ft/sec is fired at an angle of 6° with the horizontal. Find the vertical and horizontal components of the velocity.</p> <p>(SMP 1,2,4,5)</p> |

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| CCSS Domain: Vector and Matrix Quantities (N-VM) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Perform operations on vectors | <p>4. (+) add and subtract vectors.</p> <p>a. add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.</p> <p>b. given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.</p> <p>c. understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction.</p> <p>Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.</p> | 1.5, 1.8 | Strategic Thinking | <p>4. Let vector $v=(-2,5)$ and vector $w=(3,4)$ find the sum, difference, magnitude and direction of these two vectors. Then graph the sum.</p> | <p>4. Let vector $x=(1,3)$ and vector $y=(-3,6)$ find the sum, difference, magnitude and direction of these two vectors. Then graph the difference.</p> <p>(SMP 2,4,5)</p> |

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| CCSS Conceptual Category: Number and Quantity | | | | | |
| CCSS Domain: Vector and Matrix Quantities (N-VM) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Perform operations on vectors | <p>5. (+) multiply a vector by a scalar.</p> <p>a. represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.</p> <p>b. compute the magnitude of a scalar multiple cv using $\ cv\ = c v$. Compute the direction of cv knowing that when $c v \neq 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).</p> | 1.5, 1.8 | Strategic Thinking | 5. Let vector $v=(-1,4)$ find and graph $2v$. | <p>5. Let vector $v=(-10,6)$ find and graph $3v$.</p> <p>(SMP 2,4,5)</p> |

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| CCSS Conceptual Category: Number and Quantity | | | | | |
| CCSS Domain: Vector and Matrix Quantities (N-VM) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Perform operations on matrices and use matrices in applications | <p>6. (+) use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.</p> <p>7. (+) multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.</p> <p>8. (+) add, subtract, and multiply matrices of appropriate dimensions.</p> <p>9. (+) understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.</p> | 2.1, 2.7, 3.2, 3.3 | Strategic Thinking | <p>6. Using matrix multiplication, encode the account number from a given credit card number.</p> <p>7. Given a 3x3 matrix find its scalar product when the scalar equals -2.</p> <p>8. Given a 2x3 and a 3x4 matrix, find their sum, difference and product.</p> <p>9. Given a variety of matrices, show that some pairs can be multiplied while others cannot.</p> | <p>6. Given a square matrix, find the inverse.</p> <p>7. Given a 2x4 matrix, find the scalar product when the scalar equals 5.</p> <p>8. Given a 2x2 and 2x4 matrix, find their sum, difference and product, if possible.</p> <p>9. Given a variety of matrices, show that some can be added, subtracted and multiplied, while others cannot. (SMP 1,2,3,4,5)</p> |

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| CCSS Conceptual Category: Number and Quantity | | | | | |
| CCSS Domain: Vector and Matrix Quantities (N-VM) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| <i>The students will:</i> | | | | | |
| Perform operations on matrices and use matrices in applications | <p>10. (+) understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.</p> <p>11. (+) multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.</p> <p>12. (+) work with 2×2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.</p> | 1.8 | Strategic Thinking | <p>10. Given a 3x3 zero matrix, show that the product of the matrix and another given matrix of appropriate dimensions is 0.</p> <p>11. Given a 3x1 matrix and a 1x4 matrix, show that their product is a vector.</p> <p>12. Given a triangle with vertices (1,3), (2,-4), (7,8) use the correct determinant formula to find area.</p> | <p>10. Given a 3x3 identity matrix, show that the product of the matrix and another given matrix of appropriate dimensions is again the given matrix.</p> <p>11. Given a 2x1 matrix and a 1x3 matrix, show that their product is a vector.</p> <p>12. Given a triangle with vertices (2,8), (-1,-3) and (0,5) use the correct determinant formula to find area.</p> <p>(SMP 1,2,4,5)</p> |

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|--|--|---------------------|---------------------------|---|--|
| CCSS Conceptual Category: Algebra | | | | | |
| CCSS Domain: Seeing Structure in Expressions (A-SSE) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| <i>The students will:</i> | | | | | |
| Write expressions in equivalent forms to solve problems | <p>4. derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. ★</p> <p>Arithmetic with Polynomials and Rational Expressions</p> | <p>MA 5 1.6</p> | <p>Strategic Thinking</p> | <p>4. For the sum S_n, why is the last term of the series a_1r^{n-1} and not a_1r^n?</p> | <p>4. In January the Smith family starts saving for a trip to Hawaii. In August, the Smiths expect the vacation to cost \$5,375. They start with \$525 and each month plan to deposit 20% more than the previous month. Will they have enough money for the trip? In your solution show the derivation and use the formula.</p> <p>(SMP 4,7,8)</p> |

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|---|---|--------------------------|--------------------|--|--|
| CCSS Conceptual Category: Algebra | | | | | |
| CCSS Domain: Reasoning with Equations and Inequalities (A-REI) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Solve systems of equations | <p>8. (+) represent a system of linear equations as a single matrix equation in a vector variable.</p> <p>9. (+) find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).</p> | 2.7 | Strategic Thinking | <p>8. Given a 2×2 system of linear equations, form and solve the matrix equation.</p> <p>9. Given a 3×3 system of linear equations, use a graphing calculator to find the inverse of the associated matrix. And use the inverse to solve the system.</p> | <p>8. Solve $-6x+3y=8$ and $4x-2y=10$ using a matrix equation.</p> <p>9. Solve $x+y+z=4$, $4x+5y=4$ and $y-3z=-9$ using inverse matrices on the graphing calculator.</p> <p>(SMP 1,2,4,5)</p> |

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|---|---|-------------------|---------------|---|--|
| CCSS Conceptual Category: Algebra | | | | | |
| CCSS Domain: Reasoning with Equations and Inequalities (A-REI) | | | | | |
| Show-Me Standards | | | | | |
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| <i>The students will:</i> | | | | | |
| Represent and solve equations and inequalities graphically | 11. explain why the x-coordinates of the points where the graphs of the equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. | MA 3 1.5, 1.8 | Skill/Concept | 11. Solve the system: $7x-y=6$ $-7x+y=-6$ | 11. Solve linear, polynomial, rational, absolute value, exponential and logarithmic systems of equations graphically and algebraically. (SMP 2,4,5,6) |

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|---|---|--------------------------|--------------------|--|---|
| CCSS Conceptual Category: Functions | | | | | |
| CCSS Domain: Interpreting Functions (F-IF) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Analyze functions using different representations | <p>7. graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. ★</p> <p>b. graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</p> <p>c. graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.</p> <p>d. (+) graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.</p> <p>e. graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.</p> | MA 1, 5 1.4, 1.8 | Strategic Thinking | <p>7. Given $f(x)=x^2$ graph and give vertex point, axis of symmetry equation, and direction of opening.</p> <p>7b. Graph $y=\sqrt{x+2}$</p> <p>7c. Graph $y=(x-1)(x+2)(x-3)$</p> <p>7d. Given $f(x)=(x^2+1)/(x+1)$ graph showing zeros, asymptotes and end behavior.</p> <p>7e. Graph $y=2x$</p> | <p>7. Distinguish between graphs that are parabolas and absolute value functions.</p> <p>7b. Distinguish between square root and absolute value functions, then graph.</p> <p>7c. Graph polynomial functions using zeros and a sign graph.</p> <p>7d. Explain how to find zeros and equations of all asymptotes in a given rational function.</p> <p>7e. Identify percent rate of change in functions such as $y = (1.02)t$, $y = (0.97)t$, $y = (1.01)12t$, $y = (1.2)t/10$, and classify them as representing exponential growth or decay.</p> <p>(SMP 2,4,5,6,7)</p> |

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| Subject Area: Honors Trigonometry and Pre-Calculus 11-12 (Dual-Enrollment) | | | | | |
|--|---|-------------------|--------------------|--|---|
| CCSS Conceptual Category: Functions | | | | | |
| CCSS Domain: Building Functions (F-BF) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| <i>The students will:</i> | | | | | |
| Build a function that models a relationship between two quantities | <p>1. write a function that describes a relationship between two quantities. ★</p> <p>c. (+) compose functions.</p> | 1.6, 1.7 | Strategic Thinking | <p>1c. If $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.</p> | <p>1c. The weekly cost C of producing x units in manufacturing is given by $C(x)=60x+7.50$. The number of units, x, produced in t hours is given by $x(t)=50t$. Find the time that must elapse for the cost to increase to \$15,000.</p> <p>(SMP 1,2,4)</p> |

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| | <i>The students will:</i> | | | | |
| Build new functions from existing functions | <p>4. find inverse functions.</p> <p>b. (+) verify by composition that one function is the inverse of another.</p> <p>c. (+) read values of an inverse function from a graph or a table, given that the function has an inverse.</p> <p>d. (+) produce an invertible function from a non-invertible function by restricting the domain.</p> <p>5. (+) understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.</p> | 3.4 | Strategic Thinking | <p>4b. Let $f(x)=1+x$ and $g(x)=x-1$. Show that $f(g(x))=g(f(x))=x$.</p> <p>4c. If f and g are inverses and $f(2)=3$, find $g(3)$.</p> <p>4d. Given $f(x)=x^2$ restrict the domain so the function can have an inverse.</p> <p>5. Find $\log_2 8$.</p> | <p>4b. Using composition, how do you determine if two functions are inverses?</p> <p>4c. State the equation of symmetry for two inverse functions.</p> <p>4d. Given a basic parabola equation, using the vertex, how many different equations can be formed by using the inverse?</p> <p>5. Rewrite $2^4=16$ in logarithmic form.</p> <p>(SMP 1,4,5)</p> |

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|---|---|--------------------------|--------------------|--|--|
| CCSS Conceptual Category: Functions | | | | | |
| CCSS Domain: Trigonometric Function (F-TF) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Extend the domain of trigonometric functions using the unit circle | <p>1. understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.</p> <p>2. explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.</p> <p>3. (+) use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x, where x is any real number.</p> <p>4. (+) use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.</p> | 3.4 | Strategic Thinking | <p>1. What is the measure of the arc formed by the slice of pie with a radius of 12 inches and a central angle of 60°. State your answer in radians.</p> <p>2. Sketch a unit circle and find the sine of 150°.</p> <p>3. Find the sine, cosine, and tangent of $5\pi/3$.</p> <p>4. Which trig functions are even?</p> | <p>1. Given various radii and central angles on provided diagrams, convert to radian measures and solve.</p> <p>2. Use the unit circle to evaluate trigonometric functions at various angles.</p> <p>3. Find the sine, cosine and tangent of 0.</p> <p>4. Which trig functions are odd?</p> <p>(SMP 2,3,6)</p> |

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| CCSS Domain: Trigonometric Function (F-TF) | | | | | |
| Show-Me Standards | | | | | |
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| | <i>The students will:</i> | | | | |
| Model periodic phenomena with trigonometric functions | <p>5. choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★</p> <p>6. (+) understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.</p> <p>7. (+) use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.★</p> | 1.5, 1.8 | Strategic Thinking | <p>5. The function given by $p=100-20(\cos 5\pi t/3)$ approximates the blood pressure p in millimeters of mercury at time t, in seconds, for a person at rest. Find the amplitude and period of the function.</p> <p>6. Graph $y=\sin x$. Determine the restriction on the domain so that the inverse of the function exists.</p> <p>7. Solve $\cos 2x=-1/2$ for all possible x values.</p> | <p>5. When tuning a piano a technician strikes a tuning fork for the A above middle C and sets up a wave motion that can be approximated by $y=.001\sin 880\pi t$, where t is the time in seconds. What is the period of the function?</p> <p>6. Graph $y=\cos x$. Determine the restriction on the domain so that the inverse of the function exists.</p> <p>7. Solve $\sin 2x=1/2$ for all possible x values. (SMP 1,2,3,4)</p> |

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| CCSS Domain: Trigonometric Function (F-TF) | | | | | |
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| | <i>The students will:</i> | | | | |
| Prove and apply trigonometric identities | <p>8. prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.</p> <p>9. (+) prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.</p> | 1.2 | Strategic Thinking | <p>8. Using the Pythagorean Theorem and definitions of sine and cosine, prove the Pythagorean Identity.</p> <p>9. Using the Distance Formula, develop the sum and difference formulas.</p> | <p>8. Given the unit circle and an ordered pair (3,4) find the sine, cosine and tangent.</p> <p>9. Use the sum formula to find the sine of 75°. (SMP 1,2,3,4)</p> |

Mathematics Curriculum

| Subject Area: Honors Trigonometry and Pre-Calculus 11-12 (Dual-Enrollment) | | | | | |
|---|--|-------------------|--------------------|--|---|
| CCSS Conceptual Category: Geometry | | | | | |
| CCSS Domain: Expressing Geometric Properties with Equations (G-GPE) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| <i>The students will:</i> | | | | | |
| Translate between the geometric description and the equation for a conic section | 3. (+) derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant. | 1.2 | Strategic Thinking | 3. Discuss and demonstrate the difference between ellipses and hyperbolas and their respective foci. | 3. Given $4x^2+16y^2+8x-4y-9=0$ determine if its an ellipse or hyperbola and find the coordinates of the foci. (SMP 1,2,4,5) |

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|---|---|-------------------|--------------------|--|--|
| CCSS Conceptual Category: Geometry | | | | | |
| CCSS Domain: Geometric Measurement and Dimension (G-GMD) | | | | | |
| Show-Me Standards | | | | | |
| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
| | <i>The students will:</i> | | | | |
| Explain volume formulas and use them to solve problems | 2. (+) give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures. | 3.4, 3.5 | Strategic Thinking | Discuss and demonstrate Cavalieri's Principle using a variety of 3-dimensional solids. | By comparison of a cone and a cylinder, with the same base, justify the volume of a sphere. (SMP 1,2,3,5) |

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CCSS Conceptual Category: Geometry

CCSS Domain: Similarity, Right Triangles, and Trigonometry (G-SRT)

[Show-Me Standards](#)

| CCSS Cluster | Common Core Standard (D)=District Standard | Show Me Standards | DOK | Instructional Strategies Student Activities/Resources | Assessment |
|---|---|-------------------|--------------------------|--|--|
| <i>The students will:</i> | | | | | |
| Understand similarity in terms of similarity transformations | <p>9. (+) Derive the formula $A = \frac{1}{2}ab\sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.</p> <p>10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.</p> <p>11. (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).</p> | MA 2 3.2, 3.3 | Skill/Strategic Thinking | <p>9. Given a triangle, students will draw an altitude and derive the area by using sine.</p> <p>10. Given a triangle, students will solve for the angle using the Law of Sines or Law of Cosines.</p> <p>11. Using the Law of Sines and the Law of Cosines, solve a real world problem.</p> | <p>9. Given triangle ABC, find the area given $b=5$, $c=10$, the measure of angle $A=31^\circ$.</p> <p>10. In triangle RST $r=9$, $t=7$, and the measure of angle $R=110^\circ$. What is the measure of angle S?</p> <p>11. A landscaper sights the top of a tree at a 68° angle. She then moves an additional 70 ft directly away from the tree and sights the top at a 43° angle. How tall is the tree to the nearest tenth of a foot?</p> |