

TRIG EXAM MATERIAL AND EXPECTATIONS

For the Trigonometry exam, you should be able to do the following things:

Chapter 1.

- Find values of the six trigonometric functions of a number using the terminal point on the unit circle
- Find the sign of a trig function based on the quadrant of the terminal point/terminal side
- Draw an angle in standard position
- Given an angle in radians, convert to degrees
- Given an angle in degrees, convert to radians
- Find angles/arcs coterminal to a given angle/arc
- Find the reference angle/arc of a given angle/arc
- Remember the values of sin, cos, and tan for the angles $\frac{\pi}{6}$, $\frac{\pi}{4}$, and $\frac{\pi}{3}$

Chapter 2.

- Find the period and amplitude of a transformation of a trig function
- Sketch the graphs of the sine and cosine functions
- Identify graphs of all six trigonometric functions
- Find domain and range of the inverse sine, cosine, and tangent functions
- Identify graphs of these inverse trig functions

Chapter 3.

- Given two sides of a right triangle, use the Pythagorean Theorem to find the third side
- Given two sides of a right triangle, compute the six trigonometric ratios of one of the acute angles, and use inverse trig functions to compute the measure of the angle
- Given one side and an acute angle of a right triangle, use the trig ratios to find the other sides
- Simplify expressions involving compositions of trig functions and inverse trig functions
- Use the Law of Sines or Law of Cosines to solve oblique triangles
- Compute the area of a triangle

Chapter 4.

- Solve basic trigonometric equations
- Use algebra and factoring to solve more complicated trigonometric equations
- Remember the Pythagorean trig identities and the reciprocal trig identities
- Verify other trig identities, using the Pythagorean and reciprocal trig identities, algebraic manipulations, and the other fundamental trig identities from Sections 4.3, 4.4 and 4.5

Chapter 5.

- Plot a point in polar coordinates
- Given a point in polar coordinates, convert to rectangular coordinates
- Given a point in rectangular coordinates, convert to polar coordinates
- Given an equation in polar coordinates, convert the entire equation to rectangular coordinates
- Given a complex number, write in polar form by finding the modulus and argument
- Using the polar form of complex numbers, compute products, quotients, and powers of complex numbers
- Draw a vector with initial point at the origin
- Given a vector in component form, express in terms of \mathbf{i} and \mathbf{j}
- Given a vector, compute its magnitude and direction
- Given the magnitude and direction of a vector, compute its horizontal and vertical components and express the vector in component form or in terms of \mathbf{i} and \mathbf{j}
- Add vectors and multiply a vector by a scalar
- Compute the dot product of two vectors
- Use the dot product to compute the angle between two vectors
- Use the dot product to determine if two vectors are orthogonal
- Given two vectors \mathbf{u} and \mathbf{v} , calculate the component of \mathbf{u} along \mathbf{v}
- Given two vectors \mathbf{u} and \mathbf{v} , calculate the projection of \mathbf{u} onto \mathbf{v}

Possible Word Problem Material.

- Use trig ratios to find lengths and distances in word problems
- Use inverse trig functions to find angles of elevation
- Use the Law of Sines or Law of Cosines to find lengths and distances in word problems
- Use the dot product of vectors to calculate the work done by a force over a distance