

Review Sheet for the Final Exam (Chapters 4, 5, and 6, and Sections 10.7 and 10.8)
Math 1060–5

Section 4.1

- Know how to convert between degrees and radians.
- Be able to sketch angles in standard position and determine in which quadrant the angle lies.
- Be able to find coterminal angles.
- Be able to find complementary and supplementary angles for a given angle.
- **Practice Problems:** 4.1 #7, 13, 19, 21, 47, 51

Section 4.2

- Given a point on the unit circle, be able to find all six trigonometric functions of the corresponding angle.
- Be able to find the point (x, y) on the unit circle that corresponds to common angles ($\theta = 0, \pi/6, \pi/4, \pi/3, \pi/2$, etc.)
- Know which trigonometric functions are odd and which are even, and be able to use this to help evaluate trigonometric functions.
- Be able to use the period of trigonometric functions to help calculate trigonometric functions.
- Know whether each trigonometric function is positive or negative in each quadrant.
- **Practice Problems:** 4.2 #1, 7, 23, 29, 37

Section 4.3

- Given a right triangle, be able to find all six trigonometric functions of an angle in the triangle.
- Know the Pythagorean identities.
- **Practice Problems:** 4.3 #1, 9, 17, 27, 29, 33, 37

Section 4.4

- Know how to calculate reference angles, and use them to evaluate trigonometric functions.
- Given the value of one trigonometric function and a constraint, be able to calculate the remaining trigonometric functions.
- **Practice Problems:** 4.4 #15, 19, 29, 41, 51, 53, 55

Section 4.5

- Know how to calculate the amplitude and period of sine and cosine functions.
- Be able to sketch the graph of sine and cosine functions, using the amplitude, period, and translations.
- **Practice Problems:** 4.5 #35, 37, 51, 53, 55

Section 4.6

- Be able to sketch the graphs of tangent, cosecant, secant, and cotangent functions, including information on the period and vertical asymptotes.
- **Practice Problems:** 4.6 #7, 11, 13, 19, 29

Section 4.7

- Know how to calculate inverse sine, inverse cosine, and inverse tangent functions, and be aware of their domains and ranges.
- Be able to evaluate the composition of trigonometric and inverse trigonometric functions.
- **Practice Problems:** 4.7 #1, 5, 7, 43–57 odds

Section 4.8

- Know how to apply trigonometric functions (and right triangles) to word problems.
- **Practice Problems:** 4.8 #15, 17, 21, 27, 37

Section 5.1

- Be able to use trigonometric identities to simplify expressions.
- **Practice Problems:** 5.1 #1, 3, 5, 27–43 odds

Section 5.2

- Be able to verify trigonometric identities.
- **Practice Problems:** 5.2 #1–37 odds

Section 5.3

- Know how to solve trigonometric equations, giving all solutions when appropriate.
- **Practice Problems:** 5.3 #7–33 odds

Section 5.4

- Know how to use the sum and difference formulas for the sine, cosine, and tangent functions.
- **Practice Problems:** 5.4 #1–21 odds, 37–49 odds

Section 5.5

- Be able to use double-angle formulas.
- Know how to use the half-angle formulas, including whether the resulting value is positive or negative.
- **Practice Problems:** 5.5 #23, 25, 27, 49, 51, 53

Section 6.1

- Be able to use the Law of Sines to solve a triangle, and be able to recognize when there are two solutions or no solutions to a triangle.
- Be able to find the area of a triangle.
- **Practice Problems:** 6.1 #1, 3, 5, 13, 29, 31, 33, 43

Section 6.2

- Know how to use the Law of Cosines to solve a triangle and recognize when to use it instead of the Law of Sines.
- **Practice Problems:** 6.2 #1–9 odds, 15

Section 6.3

- Be able to find the component form and magnitude of a vector.
- Know how to sketch vectors on the coordinate plane.
- Be able to find a unit vector in the direction of a given vector.
- Be able to add and subtract vectors, as well as multiply them by scalars.
- Know how to use the standard unit vectors \hat{i} and \hat{j} .
- Know how to find the direction angle of a vector.
- **Practice Problems:** 6.3 #3–13 odds, 21–37 odds, 53, 55

Section 6.4

- Know how to calculate the dot product of two vectors.
- Be able to find the angle between two vectors, and be able to tell when two vectors are parallel, orthogonal, or neither.
- **Practice Problems:** 6.4 #1–37 odds

Section 6.5

- Know how to plot complex numbers on the coordinate plane.
- Be able to write complex numbers in trigonometric form.
- Given the trigonometric form of two numbers, be able to multiply and divide them.
- Be able to use DeMoivre's Theorem to find powers of complex numbers.
- **Practice Problems:** 6.5 #11–39 odds, 47–57 odds, 71–87 odds, 105, 107

Section 10.7

- Be able to plot points given with polar coordinates.
- Know how to convert between rectangular and polar coordinates.
- Be able to convert between rectangular and polar equations.
- Be able to sketch the graph of basic polar equations.
- **Practice Problems:** 10.7 #1–25 odds, 33–69 odds

Section 10.8

- Be able to recognize symmetry about the horizontal axis, vertical axis, and the origin when graphing in polar coordinates.
- Be able to find the maximum and minimum radius for a function in polar coordinates.
- Be able to graph in polar coordinates.
- **Practice Problems:** 10.8 #21–29 odds