

Advanced Mathematics 2200

Unit 2: Trigonometry

Text: Pre – Calculus 11

Chapter 2

By the end of the unit, it is expected that students will:

Outcomes	Text Book
<p>1. Demonstrate an understanding of angles in standard position [0° to 360°].</p> <ul style="list-style-type: none"> • <i>Sketch an angle in standard position, given the measure of the angle.</i> • <i>Determine the quadrant in which a given angle in standard position terminates.</i> • <i>Determine the reference angle for an angle in standard position.</i> • <i>Explain, using examples, how to determine the angles from 0° to 360° that have the same reference angle as a given angle.</i> • <i>Illustrate, using examples, that any angle from 90° to 360° is the reflection in the x-axis and/or the y-axis of its reference angle.</i> • <i>Draw an angle in standard position given any point $P(x, y)$ on the terminal arm of the angle.</i> • <i>Illustrate, using examples, that the points $P(x, y)$, $P(-x, y)$, $P(-x, -y)$ and $P(x, -y)$ are points on the terminal sides of angles in standard position that have the same reference angle.</i> 	<p>Section 2.1 pp. 74-87</p>
<p>2. Solve problems, using the three primary trigonometric ratios for angles from 0° to 360° in standard position.</p> <ul style="list-style-type: none"> • <i>Determine, using the Pythagorean theorem, the distance from the origin to a point $P(x, y)$ on the terminal arm of an angle.</i> • <i>Determine the value of $\sin \theta$, $\cos \theta$, or $\tan \theta$ given any point $P(x, y)$ on the terminal arm of angle θ.</i> • <i>Determine the sign of a given trigonometric ratio for a given angle, without the use of technology, and explain.</i> • <i>Sketch a diagram to represent a problem.</i> • <i>Determine, without the use of technology, the value of $\sin \theta$, $\cos \theta$, or $\tan \theta$ given any point $P(x, y)$ on the terminal arm of angle θ, where $\theta = 0^\circ, 90^\circ, 180^\circ, 270^\circ$ or 360°.</i> • <i>Solve, for all values of θ, an equation of the form $\sin \theta = a$ or $\cos \theta = a$, where $-1 \leq a \leq 1$, and an equation of the form $\tan \theta = a$, where a is a real number.</i> • <i>Determine the exact value of the sine, cosine or tangent of a given angle with a reference angle of 30°, 45° or 60°.</i> • <i>Describe patterns in and among the values of the sine, cosine and tangent ratios for angles from 0° to 360°.</i> 	<p>Section 2.2 pp. 88-99</p>

- *Solve a contextual problem, using trigonometric ratios.*

3. Solve problems, using the cosine law and the sine law, including the ambiguous case.

- *Sketch a diagram to represent a problem that involves a triangle without a right angle.*
- *Solve, using primary trigonometric ratios, a triangle that is not a right triangle.*
- *Explain the steps in a given proof of the sine law and cosine law.*
- *Sketch a diagram and solve a problem, using the sine law.*
- *Describe and explain situations in which a problem may have no solution, one solution or two solutions.*
- *Sketch a diagram and solve a problem, using the cosine law.*

Section 2.3
pp.100-113