

# Math 11 Pre-Calculus LG 3

## TRIGONOMETRY



### INTRODUCTION:

One of the most useful branches of mathematics....check out pages 72 and 73.



### LEARNING GUIDE EXPECTATIONS:

On the completion of this learning guide you will be able to:

- 1) sketch an angle in standard position and identify the reference angle.
- 2) determine the exact values of the sine, cosine and tangent ratios of  $30^\circ$ ,  $45^\circ$  and  $60^\circ$ .
- 3) solve trigonometric problems involving angles between  $0^\circ$  and  $360^\circ$ .
- 4) find unknown parts of a triangle using the sine law or the cosine law.



### EVALUATION:

You are ready to progress to the next learning guide when you can demonstrate your understanding of the above expectations. Please refer to your Mathematics 11 Pre-Calc Marks Record Sheet to determine the assessment.



### RESOURCES NEEDED:



Math 11 Pre-Calc Text



THSS Math 11 Pre-Calc Learning Guides.

### LEARNING ACTIVITIES:



**Expectation #1: Sketch an angle in standard position and identify the reference angle.**

**Expectation #2: Determine the exact values of the sine, cosine and tangent ratios of  $30^\circ$ ,  $45^\circ$  and  $60^\circ$ .**



1. [Watch and take notes on instructional video on Angles in Standard Position.](#)



2. Read pages 74 and the Link the Ideas on page 77. Read pages 78 and 79.
3. Work through Example 1 on pages 79-80. Now complete Your Turn on page 80.
4. Work through Example 2 on page 80. Now complete Your Turn on page 80.
5. Work through Example 3 on page 81. Now complete Your Turn on page 81.
6. Work through Example 4 on page 82.



7. Read Key Ideas on page 82. In your math journal, sketch an angle of  $120^\circ$  in standard position and label the initial arm, terminal arm and the reference angle. Draw and label the 2 special triangles on page 82 and make sure you can determine the exact trig ratios for the angles  $30^\circ$ ,  $45^\circ$ , and  $60^\circ$ .



8. Complete page 83-86 #1-9, 11-13, 15-17, 19, 21.



**Expectation #3: Solve trigonometric problems involving angles between  $0^\circ$  and  $360^\circ$ .**



1. [Watch and take notes on instructional video on Trig Ratios of any Angle.](#)

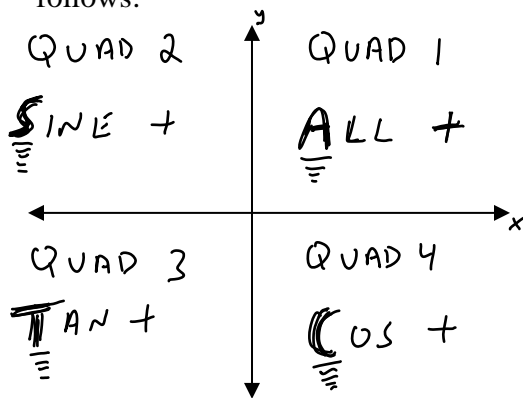


2. Complete the Investigate Trigonometric Ratios for Angles Greater Than  $90^\circ$  on pages 88-89.

3. Read Link the Ideas on page 90.



4. In your math journal, include the information about the trig ratios in the 4 quadrants found on page 90. A short-cut way of remembering the signs of the ratios can be as follows:



Remember:

All Students Take Calculus!!

In Quad 1: All trig ratios are positive.

In Quad 2: Sin is positive, the rest are negative.

In Quad 3: Tan is positive, the rest are negative.

In Quad 4: Cos is positive, the rest are negative.

5. Work through Example 1 on page 91. In your journal, complete Your Turn on page 91.

6. Work through Example 2 on page 91. In your journal, complete Your Turn on page 91.

7. Work through Example 3 on page 92. In your journal, complete Your Turn on page 92.

8. Work through Example 4 on page 93. In your journal, complete Your Turn on page 93.

9. Read the top of page 94 and then work through Example 5 on page 94. In your journal, complete Your Turn on page 94.

10. Work through Example 6 on page 95. In your journal, complete Your Turn on page 95.



11. Complete pages 96-98 #1-9, 11-16, 18, 22.



**Expectation #4: Find unknown parts of a triangle using the sine law or the cosine law.**



1. [Watch and take notes on instructional video on the Sine Law.](#)



2. Read the top of page 100 and Link the Ideas on pages 101-102.

3. Work through Example 1 on pages 102-103. Now complete Your Turn on page 103.

4. Work through Example 2 on page 104. Now complete Your Turn on page 104.

5. Read about the ambiguous case on pages 104-105.

6. Work through Example 3 on pages 106-107. Now complete Your Turn on page 107.



7. Read Key Ideas on page 107. In your journal, write down the formula for the sine law and explain when you would use this law. For each ambiguous case, determine when there would be no solution, 1 solution or 2 solutions.



8. Complete pages 108-112 #1-9, 10-13, 15, 17.



9. [Watch and take notes on instructional video on the Cosine Law.](#)



10. Read Link the Ideas on page 116.

11. Work through Example 1 on pages 116-117. Now complete Your Turn on page 117.

12. Work through Example 2 on pages 117-118. Now complete Your Turn on page 118.

13. Work through Example 3 on pages 118-119. Now complete Your Turn on page 119.



14. Read Key Ideas on page 119. In your journal, write down the formula for the cosine law and explain when you would use this law.



15. Complete pages 119-124 #1-12, 14, 15, 17-21, 23-26.

## REVIEW AND CHALLENGE



1. Complete Chapter 2 Review pages 126-128 #1-24.

## PRACTICE QUIZZES

[Practice quiz #1](#)

[Practice quiz #2](#)

[Practice quiz #3](#)

[Practice quiz #4](#)