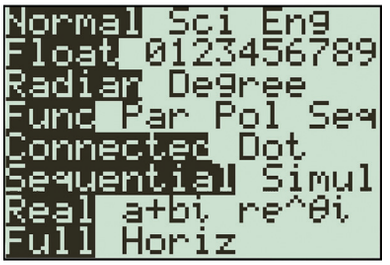
Calculator Guide
TI83/84 Skills for Unit 4

Lesson 4.4: The Sine Law

Three trigonometric functions and three inverse trigonometric relationships are built into the TI-83 and the TI-84 calculators. MODE (radian or degree) will affect the output when using the trigonometric features.

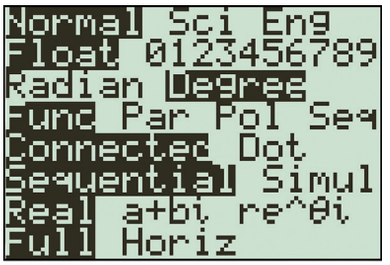
A. MODE Setting

A **MODE** setting will determine the output, so it is important to check the setting before using the trigonometry features of the calculator. **Please note that when your calculator is cleared before writing exams, you will have to reset the MODE to DEGREE.**



- Press [MODE]
  Hint: Column 2 Row 2, just to the right of the [2nd] Key.

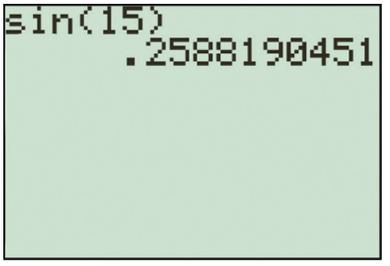
Note: When the TI83/84 calculator has been reset to factory settings, all **MODE** settings will be returned to those listed on the left side of the screen.



To change the **MODE** setting, move the cursor to DEGREE.
- Press [Down Arrow] twice
- Press [Right Arrow] once
- Press [ENTER]
- Press [Down Arrow] once
- Press [2nd] [MODE]
  Hint: Returns you to full screen.

Before working with any of the trigonometric ratios, always check MODE to ensure you are in degree mode. Degree mode will not affect algebraic calculations, so it is fine to leave it in degree mode for your entire exam.

B. Trigonometric Function Keys



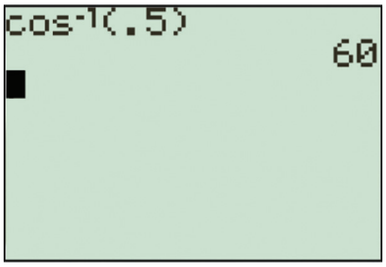
The **[SIN]** sine, **[COS]** cosine and **[TAN]** tangent keys are the main trigonometric keys. Always check **MODE** to ensure that you are in degree mode.

To evaluate sin(15°)
- Press [SIN]
  Hint: Column 2 Row 5
- Press [1] [5] [)]
- Press [ENTER]

C. Inverse Trigonometric Relationships

SIN^{-1}, COS^{-1}, TAN^{-1} are the three inverse trigonometric relationships that are built into the TI83/84.

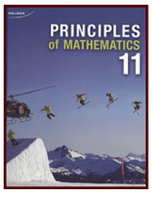
Find the angle given the ratio or two side measures of a right angle triangle by using [2nd] **[SIN]** , [2nd] **[COS]**, and [2nd] **[TAN]** keys. Always check **MODE** to ensure you are in degree mode.



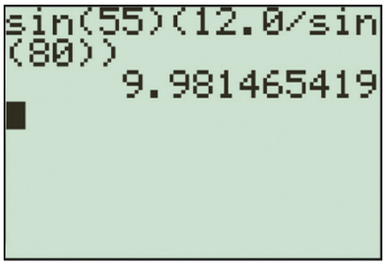
To evaluate A when $\cos A = 0.5$,
- Press [2nd] [COS]
- Press [.] [5] [)]
- Press [ENTER]

D. The Sine Law and the TI83/84.

Use the sine law formula when you know two sides and an angle and you want to find the measure of an angle opposite a known side or, when you know two angles and a side and want to get the length of a side opposite a known angle. In both cases, you must already know a side and the opposite angle.

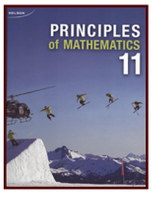


Turn to page 134 in *Principles of Mathematics 11*. Use the TI83/84 calculator to solve for side AC, which is opposite angle 55°.

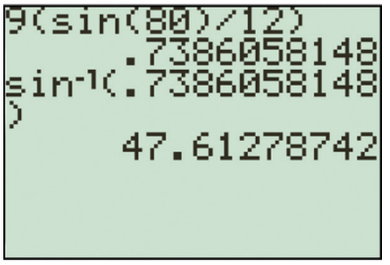


- Press [SIN]
  Hint: Column 2 Row 5
- Press [5] [5] [)] [(] [1] [2] [.] [0] [/] [SIN] [8] [0] [)] [)]
- Press [ENTER]

The length of AC is 9.981… or 10.0 m when rounded to the nearest tenth of a metre.



Turn to page 136-137 in *Principles of Mathematics 11*. Use the TI83/84 calculator to solve for the measure of angle B.



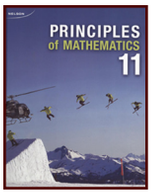
- Press [9] [(] [SIN] [8] [0] [)] [/] [1] [2] [)]
- Press [ENTER]
- sin B = 0.7386058148…
- Press [2nd] [SIN] [2nd] [(-)]
  Hint: the [(-)] key is located at the bottom of column 4.
- Press [ENTER]
- Angle B = 47.612…°

Lesson 4.5: The Cosine Law

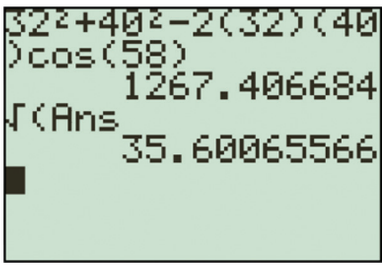
A. **The Cosine Law and the TI83/84.**

Use the cosine law formula when you know two sides that touch each other and an angle that is in between them, and you want to find the measure of the third side (opposite the known angle).

You can also use the cosine law formula to find any angle if you know the lengths of all three sides .

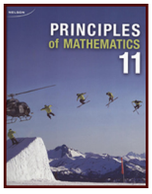


Turn to page 146 in *Principles of Mathematics 11*. Use the TI83/84 calculator to determine the length of side *CB*.

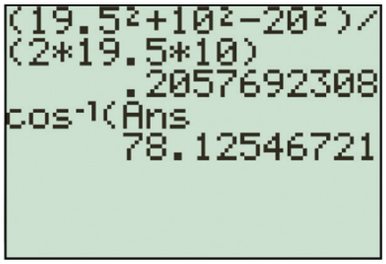


- Press [3] [2] [x^2] [+] [4] [0] [x^2] [-] [2] [(] [3] [2] [)] [(] [4] [0] [)] [COS] [5] [8] [)]
- Press [ENTER]
- Press [2nd] [x^2] [2nd] [(-)]
  Hint: the [(-)] key is located at the bottom of column 4.
- Press [ENTER]

The length of side *CB* is 35.600… or 36 m when rounded to the nearest metre.



Turn to page 148 in *Principles of Mathematics 11*. Use the TI83/84 calculator to solve for the measure of angle B.



- Press [(] [1] [9] [.] [5] [x^2] [+] [1] [0] [x^2] [-] [2] [0] [x^2] [)] [/] [(] [2] [*] [1] [9] [.] [5] [*] [1] [0] [)]
- Press [ENTER]
- Press [2nd] [COS] [2nd] [(-)]
  Hint: the [(-)] key is located at the bottom of column 4.
- Press [ENTER]

Angle $B = 78.125\ldots°$