

Algebra 2
Unit: Trigonometric Functions
Section: Basic Angles and Radian Measure

Tutorial: Converting Between Degrees and Radians

Screen 1

In this tutorial we are going to discuss how to change between degrees and radian measures of angles.

Screen 2

Converting between degrees and radians.

It is very important that you can easily convert between degrees and radians. The following two conversions will be very helpful.

Converting from Degrees to Radians

In order to convert from degrees to radians multiply your degrees by pi radians divided by one hundred eighty degrees. This will cancel your degrees and leave you with just radians. Remember that pi radians and one hundred eighty degrees are equivalent.

Converting from Radians to Degrees

In order to convert from radians to degrees multiply your radians by one hundred eighty degrees divided by pi radians. This will cancel your radians and leave you with just degrees.

Screen 3

Examples

Number one. Convert one hundred seventy five degrees into radians. Using the conversion we just learned multiply one hundred seventy five degrees by pi radians divided by one hundred eighty degrees. This will equal one hundred seventy five pi divided by one hundred eighty radians. Notice the degrees have canceled. Simplifying the fraction we can compute a final answer of thirty-five pi divided by thirty-six radians.

Number 2. Convert negative two pi divided by three radians into degrees. Using the conversion we just learned multiply negative two pi divided by three radians by one hundred eighty degrees divided by pi radians. This will equal negative two times one hundred eighty divided by three. Notice the radians cancel and you are left with degrees. Simplifying this fraction we can compute our final answer of negative one hundred twenty degrees.

Number 3. Convert two point three radians into degrees. This problem is different since our radians are in terms of a decimal. The process of converting this measure to degrees is the same. Two point three radians times one hundred eighty degrees divided by pi radians is equal to two point three times one hundred eighty degrees divided by pi. In this case pi does not cancel out. You can either use 3.14 for pi or you may have a pi button on your calculator. Simplifying this fraction we can calculate and approximate value of one hundred thirty one point seven eight degrees.

Screen 4

Now you try. Answer the following problems. Click solution to check your work.

1. Convert 110° into radians.

Solution

11 pi divided by 18 radians

2. Convert pi divided by three radians into degrees.

Solution

60°

3. Convert 4.5 radians into degrees.

Solution

257.83°

Screen 5

Remember the following two conversions when working with degrees and radians.

Converting from Degrees to Radians

In order to convert from degrees to radians multiply your degrees by pi radians divided by one hundred eighty degrees.

Converting from Radians to Degrees

In order to convert from radians to degrees multiply your radians by one hundred eighty degrees divided by pi radians.