Sine Waves (43:45)

Differentiate between radius and diameter.

Write the formulas used to calculate the area and perimeter, or circumference, of a circle using radius and diameter.

Calculate the area and perimeter of a circle with a radius of 24ft.

Describe the relationship of a circle's perimeter with that of its radius.

Describe the radian. Determine the number of radians in a full circle.

Determine the position in radians for a point that has traveled 1/4 of the way around a circle.

Determine the position in radians for a point that has traveled halfway around a circle.

Determine the position in radians for a point that has traveled 3/4 of the way around a circle.

Determine the position in radians for a point that has traveled 1/3 of the way around a circle.

Determine the position in radians for a point that has traveled 2/3 of the way around a circle.

Determine the position in radians for a point that has traveled 10x around a circle.

Describe degrees. Determine the number of degrees in a full circle.

Determine the position in degrees for a point that has traveled 1/4 of the way around a circle.

Determine the position in degrees for a point that has traveled halfway around a circle.

Determine the position in degrees for a point that has traveled 3/4 of the way around a circle.

Determine the position in degrees for a point that has traveled 1/3 of the way around a circle.

Determine the position in degrees for a point that has traveled 2/3 of the way around a circle.

Determine the position in degrees for a point that has traveled 10x around a circle.

Differentiate between degrees as employed in circuit analysis and navigational degrees.

Which do you like better, radians or degrees?

Differentiate between + degrees and – degrees.

Determine the + equivalent for -30°.

Describe the conversion factor from degrees to radians. Describe the conversion factor from radians to degrees.

Perform the following conversions:
- π/2 radians to degrees
- 120° to radians.
- π/6 radians to degrees
- 45° to radians
- 3π/4 radians to degrees
- 60° to radians
- π/6 radians to degrees
- 45° to radians

Describe the origin of the sine wave and its relation to the circle.

Draw a plot of the sine wave for a full 360° cycle. Draw this on your cheat sheet or commit it to memory

Identify positions where the sine function experiences + maximums, - maximums, and 0 values.

Describe the sine wave's properties with respect to the quarters of a circle.

Define planes of symmetry within the sine wave.

Identify the proper settings for the TI89 scientific calculator and place your calculator in the specified mode.

Identify the function on the TI89 that converts degrees to radians. Identify the formatting method the TI89 uses to express an angle in degrees. Identify the formatting method the TI89 uses to express an angle in radians.

Use the TI89 to perform the following conversions:
- 3 radians to degrees
- 80° to radians
- 17π/12 radians to degrees
- 20° to radians

Identify how to perform the sin function on the TI89.

Use the TI89 to calculate the sine function at the following angles.
30°, 34°, 247°, 13π/12 radians, 900°

Identify the purpose of the inverse sine function, $\sin^{-1}$. Identify how to perform the $\sin^{-1}$ function on the TI89.

Identify limitations of the $\sin^{-1}$ function. Identify positions where the sin-1 returns a single angle.

Use the $\sin^{-1}$ function on the TI89 to determine at which angle(s) the sine function reaches the following amplitudes: 0.5, 0.8, -0.6, 0, 1, -1, 0.2, -0.4

Describe why circular and sinusoidal properties are important concepts for electrical technicians.