**8.3 The Graphs of Sinusoidal Functions**

**By the end of the lesson you will be able to:**

* Determine the characteristics of sinusoidal functions including x-intercepts, y-intercepts, domain, range, amplitude, period and midline equations from their graphs.

**Sinusoidal functions** are any periodic functions whose graph has the same shape as that of $\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$.

 The **period** is the horizontal distance between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ maximum or minimum values. It is also \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the horizontal distance between a maximum value and minimum value.

The **equation of the midline** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the minimum and maximum values:

$$y=\frac{maximum value+minimum value}{2}$$

The **amplitude** is the positive vertical distance between the midline and either a maximum or minimum value. It is also half of the vertical distance between a maximum and minimum value.

$$a= \frac{maximum value-minimum value}{2}$$

**Example 1 – Describing the graph of a sinusoidal function in degree measure**

Describe this graph by determining the range, the equation of its midline, its amplitude and its period.



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**Example 2 – Describing the graph of a sinusoidal function in radian measure**

Describe this graph by determining the range, the equation of its midline, its amplitude and its period.



**Practice**:

