Year End Review: Sinusoidal Functions (Unit 5)

To convert angles from radians to degrees and degrees to radians, use the ratio of $180°/\pi$.

Example 1: Convert 120° into radians.

$120 \times \frac{\pi}{180} = \frac{120\pi}{180} = 2.09$

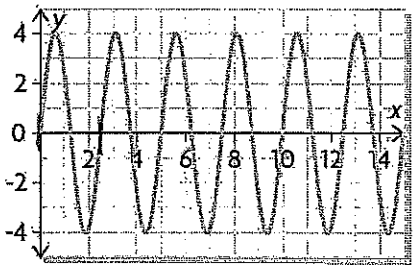
Example 2: Convert 1.43 into degrees.

$1.43 \times \frac{180}{\pi} = \frac{257.4}{\pi} = 81.9°$

The horizontal line halfway between the maximum and minimum values of a periodic function is called a midline. The amplitude is the distance from the midline to either the maximum or minimum value of a periodic function. The amplitude is always expressed as a positive number. The length of the interval of the domain to complete one cycle is called the period.

Example 3: Determine the midline, amplitude, period, and range of the following sinusoidal functions.

a.



Midline: $y = 0$ (distance from 4 to -4 is 8 ⇒ half is 4)

Amplitude: 4

Period: 2.5

Range: $-4 \leq y \leq 4$

b. $y = 3\sin(1/2(x - 90°)) + 1$

Midline: $y = 1$

Amplitude: 3

Period: $\frac{360}{1/2} = 720$

Range: $-2 \leq y \leq 4$

-2: Midline − Amplitude

4: Midline + Amplitude