

Trigonometric Functions ملخص الدوال المثلثية **الدرس الرابع فقط**

$$f(x) = a \cos(bx + c) + d$$

$$f(x) = a \sin(bx + c) + d$$

الرقم	المطلوب	القانون
1	السعة amplitude	$ a $
2	الفترة Period	$\frac{2\pi}{ b }$
3	التكرار Frequency	$\frac{ b }{2\pi}$
4	إزاحة الطور Phase shift	$\frac{-c}{ b }$
5	الازاحة الرأسية Vertical shift	d
6	خط المنتصف midline	$y = d$
$f(x) = a \tan(bx + c) + d$		
الفترة	Period	$\frac{\pi}{ b }$

1. Find the **reference angle** of the angle **495°**

- a) -30° b) -45° c) 30° d) 45°

2. Write an equation of a sinusoidal function that

satisfies **the period** $= \pi$, **amplitude** $= 5$, passes through the point $(\frac{\pi}{6}, \frac{5}{2})$

a) $y = 5\sin\left(2x - \frac{\pi}{6}\right)$

b) $y = 5\sin(2x)$

c) $y = 5\cos(2x)$

d) $y = 5\cos(2x), y = 5\sin\left(2x - \frac{\pi}{6}\right)$

3. State the **amplitude**, **period**, **frequency**, and **midline** for the **Sin** function given below

$$f(x) = 3 \sin\left(2x - \frac{\pi}{2}\right) - 4$$

a) Amplitude : 3, period : π , frequency : $\frac{3}{\pi}$, midline : $y = 4$

b) Amplitude : 3, period : π , frequency : $\frac{1}{\pi}$, midline : $y = -4$

c) Amplitude : 3, period : π , frequency : $\frac{1}{\pi}$, midline : $y = 3$

d) Amplitude : 3, period : 2π , frequency : $\frac{1}{\pi}$, midline : $y = 4$

4. State the **phase shift** and the **vertical shift** of the function

$$f(x) = -5 \sin \left(6x - \frac{\pi}{3} \right) - 7$$

a) **phase shift** : $\frac{\pi}{18}$, **vertical shift** : -5

b) **phase shift** : $\frac{18}{\pi}$, **vertical shift** : -7

c) **phase shift** : $\frac{\pi}{18}$, **vertical shift** : -7

d) **phase shift** : $\frac{\pi}{18}$, **vertical shift** : -5

5. State the **amplitude**, **period**, **frequency**, and **midline** for the function given below

$$g(x) = -5 \sin \left(-6x + \frac{\pi}{3} \right) + 4$$

a) **amplitude**: 5 , **period**: $-\frac{\pi}{3}$, **frequency**: $\frac{3}{\pi}$, and **midline**: $y = 4$

b) **amplitude**: 5 , **period**: $\frac{\pi}{3}$, **frequency**: $\frac{3}{\pi}$, and **midline**: $y = 4$

c) **amplitude**: -5 , **period**: $-\frac{\pi}{3}$, **frequency**: $\frac{3}{\pi}$, and **midline**: $y = -4$

d) **amplitude**: -5 , **period**: $\frac{\pi}{3}$, **frequency**: $\frac{3}{\pi}$, and **midline**: $y = -4$

6. For the function , Find the **Amplitude**

$$y = -2 \sin(4x + \pi) + 1 \quad \text{is}$$

- a) 2 b) -2 c) 1 d) -1

7. Find the **Phase Shift** to the function

$$y = 3 \sin \left(\frac{x}{4} - \frac{\pi}{2} \right) - 4 :$$

- a) -4 b) 3π c) 2π d) 4

GOOD-LUCK