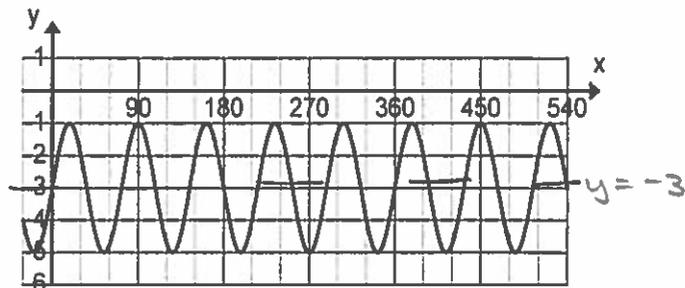
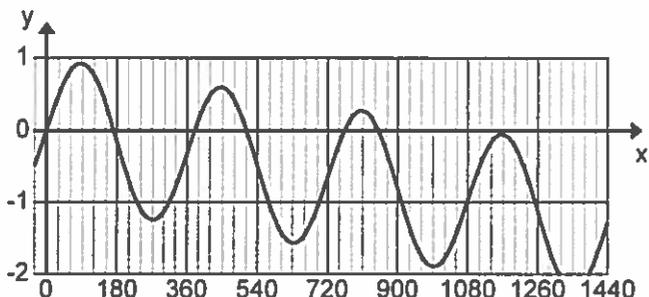


1. Classify the following functions as periodic or not. Justify your decisions. If the function is periodic, state the period, the equation of the sinusoidal axis and the amplitude.

a) Not Periodic

b) Periodic  
 period =  $\frac{360^\circ}{5} = 72^\circ$  sinusoidal axis:  $y = -3$   
 amplitude = 2



2. The graph 1b) is the transformation of  $y = \sin(x)$ . What is the equation of the transformation?

\* not on quiz  $y = 2\sin 5x - 3$

3.  $f(-4) = 2, f(5) = -1$ , the period is 6. Determine the value of:  
 a)  $f(-13) = f(-13+18) = f(5) = -1$   
 b)  $f(32) = f(32-36) = f(-4) = 2$

4. Complete the chart.

Function	Amplitude	Period	Domain of one cycle	Range
$y = 3\sin x$	3	$360^\circ$	$\{x \in \mathbb{R} \mid 0^\circ \leq x < 360^\circ\}$	$\{y \in \mathbb{R} \mid -3 \leq y \leq 3\}$
$y = 0.5\cos(4x)$	0.5	$\frac{360^\circ}{4} = 90^\circ$	$\{x \in \mathbb{R} \mid 0^\circ \leq x < 90^\circ\}$	$\{y \in \mathbb{R} \mid -0.5 \leq y \leq 0.5\}$
$y = \frac{1}{4}\sin(\frac{1}{2}x)$	$\frac{1}{4}$	$\frac{360^\circ}{\frac{1}{2}} = 720^\circ$	$\{x \in \mathbb{R} \mid 0^\circ \leq x < 720^\circ\}$	$\{y \in \mathbb{R} \mid -\frac{1}{4} \leq y \leq \frac{1}{4}\}$
* $y = \cos x + 4$ $\leftarrow$ up 4	1	$360^\circ$	$\{x \in \mathbb{R} \mid 0^\circ \leq x < 360^\circ\}$	$\{y \in \mathbb{R} \mid 3 \leq y \leq 5\}$
* $y = \sin(x+2)$ $\leftarrow$ left 2	1	$360^\circ$	$\{x \in \mathbb{R} \mid -2^\circ \leq x < 358^\circ\}$	$\{y \in \mathbb{R} \mid -1 \leq y \leq 1\}$

\* not on quiz

$\leftarrow$  still okay to use  $\{x \in \mathbb{R} \mid 0^\circ \leq x < 360^\circ\}$  since one cycle is  $360^\circ$  wide.

5. State the equation of the cosine graph with an amplitude of 5 and a period of  $270^\circ$   
 $y = 5\cos \frac{4}{3}x$   $\rightarrow k = \frac{360^\circ}{270^\circ} = \frac{4}{3}$

6. Sketch the graph of the following functions:

a)  $y = \sin x, y = 2\sin x,$

b)  $y = \cos x, y = -\cos(3x)$ , try:  $y = -\cos(3x) - 2$   $\leftarrow$  reflect in x-axis, shift down 2.  
 period =  $120^\circ$  (this not on quiz)

