1. Determine the equation for each sinusoidal function in terms of the sine and the cosine functions.

Marking Scheme (out of 15)

- 1 mark for each correct amplitude (out of 3)
- 1 mark for each correct "k" value (out of 3)
- 1 mark for each horizontal shift (use the first applicable shift to the RIGHT) (out of 3)
- 1 mark for each vertical shift (out of 3)
- 1 mark for rewriting the cosine function as a sine function (out of 3)

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Due 11:59 PM Wednesday 6 March

4-6I Evaluation- Transformations of Sinusoidal Functions

KNOWELDGE	/24

KNOWELDGE **24 MARKS**

For the following functions, determine the amplitude, period, complete transformations, domain and range, and then sketch one cycle of the graph.

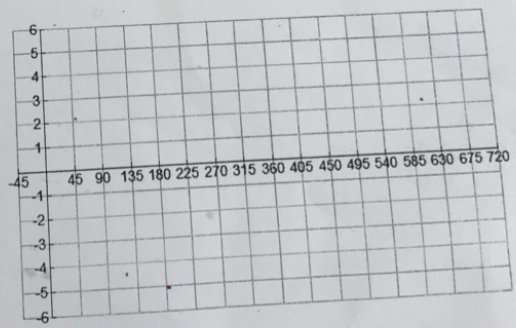
Marking Scheme (out of 12 marks each)

- 1 mark for the amplitude
- 1 mark for the period
- 4 marks for the complete transformations
- 1 mark for the domain
- 1 mark for the range
- 2 marks to transform the 5 key points listed below
- 2 marks to sketch the graph of the function

$$y = \overset{a}{3}\sin\left[\overset{k}{\frac{1}{2}}(x + \overset{d}{45^\circ})\right] + \overset{c}{1}$$

Amplitude	Period	Domain	Range
3	720°	$\{x \mid -45^\circ \leq x \leq 675^\circ\}$	$\{y \mid -2 \leq y \leq 4\}$
List (in words) the complete transformations	a: Compress the vertical stretch k: stretch horizontal d: positive right c: postive up		

x	y	→	$2x+45^\circ$	$3y+1$
0	0	→	-45	1
90	1	→	135	4
180	0	→	315	1
270	-1	→	495	-2
360	0	→	675	1



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$y = \overset{a}{2}\cos[\overset{k}{3}(x - \overset{d}{30^0})] + \overset{c}{2}$

Amplitude	Period	Domain	Range
2	120	$30 \leq x \leq 150$	$y \in R$, $0 \leq y \leq 4$
List (in words) the complete transformations	a: Vertical stretch k: horizontal compress d: left negative c: up positive		

x	y	→		
0	1	→	30°	4
90	0	→	60°	2
180	-1	→	90°	0
270	0	→	120°	2
360	1	→	150°	4