

20.5

Due 11:59 PM Wednesday 6 March

4-6I Evaluation- Transformations of Sinusoidal Functions

KNOWLEDGE /24

20.5

24 MARKS

KNOWLEDGE

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

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

Amplitude	Period	Domain	Range
3	720°	$-45^\circ < x < 675^\circ$	$(y \in \mathbb{R}; -2 \leq y \leq 4)$

List (in words) the complete transformations

1. Vertical stretch factor 3 $\rightarrow$ 2. Horizontal stretch factor 2
3. Horizontal shift to left $45^\circ \rightarrow$ Vertical shift up 1

incomplete

x	y	$\rightarrow$		
0	0	$\rightarrow$	-45	1
90	1	$\rightarrow$	135	4
180	0	$\rightarrow$	315	1
270	-1	$\rightarrow$	495	-2
360	0	$\rightarrow$	675	1

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Be careful with your photos. Part + got cut off. These are also too small!

10.5

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$$y = 2 \cos[3(x - 30^\circ)] + 2$$

Amplitude	Period	Domain	Range
2 ✓	120 ✓	50 $30^\circ \leq x \leq 150^\circ$ ✓	VER: $0 \leq y \leq 4$ ✓
List (in words) the complete transformations	1. Vertical stretch factor 2 ✓ 2. Horizontal stretch factor $\frac{1}{3}$ ✓ 3. Horizontal shift to right 30° ✓ → vertical shift up 2 units ✓		

compression $\frac{1}{3}$

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

