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MCR3U

Due 11:59 PM Wednesday 6 March

Rosedale Academy

4-6I Evaluation- Transformations of Sinusoidal Functions

KNOWLEDGE	21	/24
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KNOWLEDGE

24 MARKS

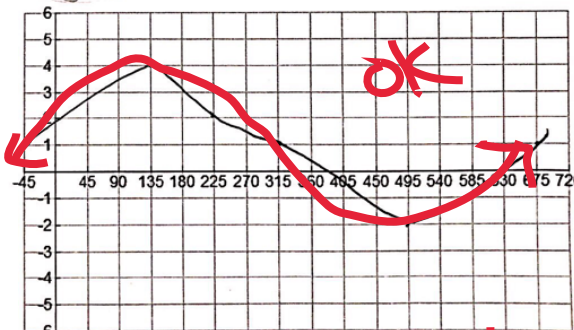
For the following functions, determine the amplitude, period, complete transformations, domain and range, and then sketch one cycle of the graph.

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

$y = 3 \sin \left[\frac{1}{2} (x + 45^\circ) \right] + 1$			
Amplitude 3	Period 720°	Domain -45° ≤ x ≤ 675°	Range (y ∈ ℝ; -2 ≤ y ≤ 4)
List (in words) the complete transformations	Vertical stretch factor 3 Horizontal stretch factor 2 Horizontal shift to left 45° Vertical shift up 1 unit.		

x	y	→	2x + 45°	3y + 1
0	0	→	-45°	1
90	1	→	135°	4
180	0	→	315°	1
270	-1	→	495°	-2
360	0	→	675°	1



Curve needs to be smooth

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$y = 2 \cos[3(x - 30^\circ)] + 2$			
Amplitude 2	Period 120	Domain $30^\circ \leq x \leq 150^\circ$	Range $y \in \mathbb{R}; 0 \leq y \leq 4$
List (in words) the complete transformations		Vertical stretch factor 2. Horizontal stretch factor $\frac{1}{3}$. Horizontal stretch shift to right 30° . Vertical shift up 2 unit.	

x	y	→	$\frac{1}{3}x + 30^\circ$	$2y + 2$
0	1	→	30°	4
90	0	→	60°	2
180	-1	→	90°	0
270	0	→	120°	2
360	1	→	150°	4

