

1. Describe the graph transformation of $y = \cos x$ to $y = 3 \cos x$

(2)

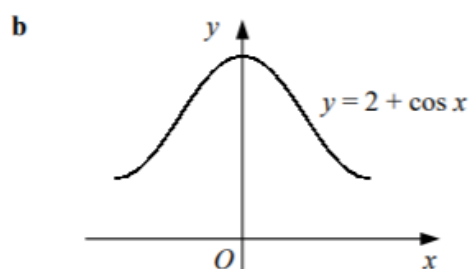
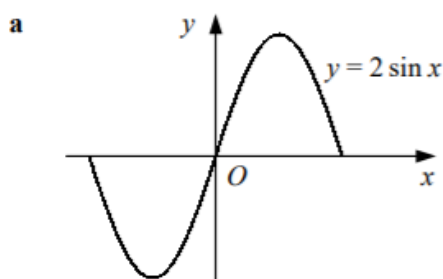
2. Describe the graph transformation of $y = \tan x$ to $y = \tan \frac{1}{2}x$

(2)

3. Describe the graph transformation of $y = \sin x$ to $y = 1 + \sin x$

(2)

4. Write down the coordinates of the turning points:



(5)

5. Sketch $y = \sin(x - 45)^\circ$ for the interval $0 \leq x \leq 360$. Show the coordinates of any points of intersection with the coordinate axes and the equations of any asymptotes.

(4)

Solutions

1.

Stretch by a factor of 3	M1
in the y-direction about the x-axis.	M1

2.

Stretch by a factor of 2	M1
in the x-direction	M1

3.

Translation by 1	M1
in the positive y direction	M1

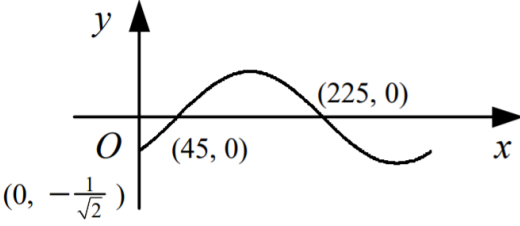
4a.

$(-90, -2)$	M1
$(90, 2)$	M1

b.

$(-180, 1)$	M1
$(0, 3)$	M1
$(180, 1)$	M1

5.

<p>Shape M1</p> <p>$(0, -\frac{1}{\sqrt{2}})$ M1</p> <p>$(45, 0)$ M1</p> <p>$(225, 0)$ M1</p>	
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