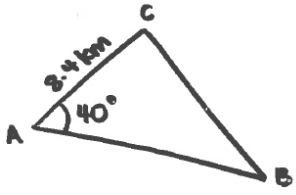




## Solutions

1.



$$\text{Area} = \frac{1}{2} ab \sin c$$

$$100 = \frac{1}{2} \times 8.4 \times a \times \sin 40$$

$$a = \frac{100}{0.5 \times 8.4 \times \sin 40} = 37.04$$

**M1**

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$BC^2 = 8.4^2 + 37.04^2 - (2 \times 8.4 \times 37.04 \times \cos 40)$$

**M1**

$$= 31.07 \dots$$

$$= 31.1 \text{ km}$$

**M1**

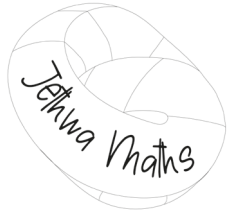


## Solutions

1.

Let $2x = y$ $5 \sin y = 2 \cos y$ $\tan y = \frac{\sin y}{\cos y}$	<b>M1</b>
$5 \tan y = 2$ $\tan y = \frac{2}{5}$ $y = 10.4$	<b>M1</b>
$2x = 21.8 + 180 = 201.8^\circ$ $2x = 21.8 + 260 = 190.9^\circ$ $2x = 21.8 + 540 = 280.9^\circ$	<b>M1</b> <b>M1</b>





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

(2)

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

(2)

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

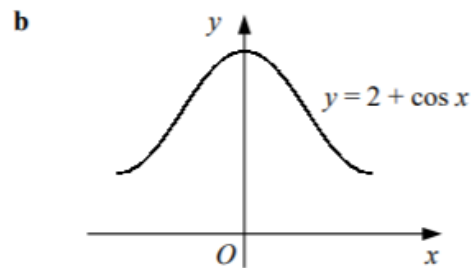
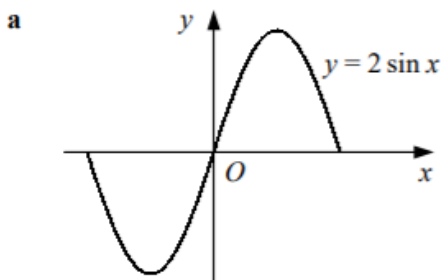
(2)

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4. Write down the coordinates of the turning points:



(5)

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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	<b>M1</b>
in the $y$ -direction about the $x$ -axis.	<b>M1</b>

2.

Stretch by a factor of 2	<b>M1</b>
in the $x$ -direction	<b>M1</b>

3.

Translation by 1	<b>M1</b>
in the positive $y$ direction	<b>M1</b>

4a.

$(-90, -2)$	<b>M1</b>
$(90, 2)$	<b>M1</b>

b.

$(-180, 1)$	<b>M1</b>
$(0, 3)$	<b>M1</b>
$(180, 1)$	<b>M1</b>

5.

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