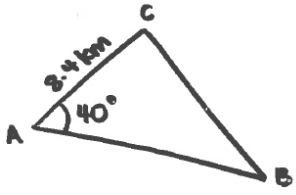


Solutions

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



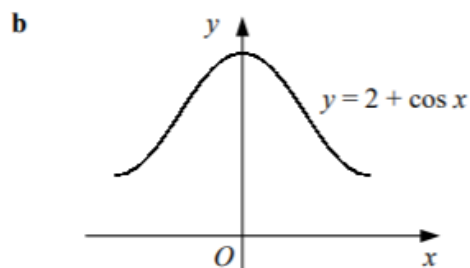
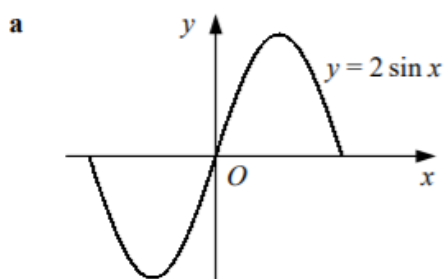


1. Describe the graph transformation of $y = \cos x$ to $y = 3 \cos x$ (2)

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