Graphs of sin, cos and tan

Specification: AQA 7357: E1, E3 · Edexcel 9MA0: 5.1, 5.3

HOMEWORK Consolidation

1 Sketch the graph of $y = \sin\theta$ for $-360° \le \theta \le 180°$. Show the coordinates of the points where it meets the θ-axis and of its maximum and minimum points.

AQA E3 · Edexcel 5.3 · L6

2 No calculator. Given that $\sin 45° = \frac{\sqrt{2}}{2}$, find the exact values of

(a) $\sin 135°$

(b) $\sin 225°$

(c) $\sin(-45°)$

(d) $\sin 405°$

AQA E3 · Edexcel 5.3 · L6

3 Find all the values of θ in the interval $-360° \le \theta \le 360°$ for which $\tan\theta = \tan 40°$.

AQA E3 · Edexcel 5.3 · L6

4 Find all the values of θ in the interval $0° \le \theta \le 720°$ for which $\cos\theta = -\cos 25°$.

AQA E3 · Edexcel 5.3 · L6

5 In triangle *ABC*, *AB* = 7 cm, *AC* = 9 cm and angle *BAC* = 52°. Find *BC*.

AQA E1 · Edexcel 5.1 · L1

6 In triangle *PQR*, *QR* = 12 cm, angle *QPR* = 48° and angle *PQR* = 65°. Find *PR*.

AQA E1 · Edexcel 5.1 · L2

7 In triangle *ABC*, *AB* = 9 cm, *AC* = 7 cm and angle *ABC* = 40°. Find the two possible values of angle *ACB*.

AQA E1 · Edexcel 5.1 · L3

8 In triangle *ABC*, *AB* = 8.2 cm, *AC* = 6.5 cm and angle *BAC* = 118°. Find the area of the triangle.

AQA E1 · Edexcel 5.1 · L4

9 The point $P(-0.6, 0.8)$ is on the unit circle, with OP at angle θ to the positive x-axis, 0° < θ < 360°.

(a) Write down $\sin\theta$, $\cos\theta$ and $\tan\theta$.

(b) Use your calculator to find θ.

AQA E1 · Edexcel 5.1 · L6

10 A boat sails 12 km from *P* to *Q* on a bearing of 050°, then 9 km from *Q* to *R* on a bearing of 170°. Find the distance *PR*.

AQA E1 · Edexcel 5.1 · L5

11 *AQA-style*. (a) Sketch the graph of $y = \tan x$ for $-180° \le x \le 180°$. State the equations of the asymptotes. [3 marks]

(b) Given that $\tan 60° = \sqrt{3}$, find all the values of x in the interval $-180° \le x \le 180°$ for which $\tan x = -\sqrt{3}$. [2 marks]

AQA E3 · Edexcel 5.3 · L6 · AQA-style

12 *Edexcel-style*. In triangle *ABC*, *AB* = 8 cm, *AC* = 5 cm and the area of the triangle is 10√3 cm².

(a) Show that $\sin BAC = \frac{\sqrt{3}}{2}$. [2 marks]

(b) Use the graph of $y = \sin x$ to explain why angle *BAC* has two possible values, and find them. [2 marks]

(c) Given that *BC* is the longest side of the triangle, find the exact length of *BC*. [3 marks]

AQA E1 · Edexcel 5.1, AQA E3 · Edexcel 5.3 · L4, L6 · Edexcel-style