# **Answers: Trigonometry (radians)**

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#### **Summary**

Answers to the questions on trigonometry, using radians to measure angles.

These are the answers to Questions: Trigonometry (radians).

Please attempt the questions before reading these answers!

## Q1

You are given the triangle below.

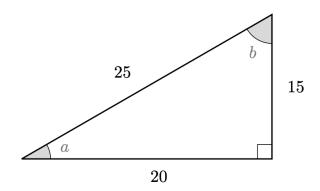


Figure 1: Q1. Triangle

1

Here,

$$\bullet \ \cos(a) = \frac{4}{5}$$

• 
$$\sin(a) = \frac{3}{5}$$

$$\bullet \ \cos(b) = \frac{3}{5}$$

$$\bullet \ \sin(b) = \frac{4}{5}$$

$$\bullet \ \tan(b) = \frac{4}{3}$$

## Q2

Using the triangle below, solve the following equations.

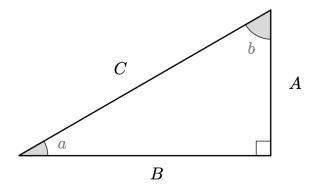


Figure 2: Q2. Triangle

- 2.1. C = 12
- 2.2. A = 2
- 2.3. A = 1.812 (to three decimal places)
- 2.4.  $A = \sqrt{6}$
- 2.5. A = 8
- 2.6.  $B = \frac{8}{\sqrt{3}}$ .

#### Q3

3.1. 
$$\cos(\pi/6) = \frac{\sqrt{3}}{2}$$

3.2. 
$$\tan(\pi/6) = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

3.3. 
$$\csc(\pi/4) = 1$$

3.4. 
$$\cot(\pi/6) - \sin(\pi/3) = \sqrt{3} - \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

3.5. 
$$\sin(\pi/2) + \cos(\pi) = 1 + (-1) = 0$$

3.6. 
$$\tan(\pi/6) - \cot(\pi/6) = \frac{1}{\sqrt{3}} - \sqrt{3}$$

3.7. 
$$\cos(0)\sin(\pi/2) = 1 \cdot 1 = 1$$

3.8. 
$$\cos(\pi/6)\sec(\pi/6) - \sin(\pi/4)\csc(\pi/4) = 1 - 1 = 0$$

3.9. 
$$\cot(\pi/2) = 0$$

# Version history and licensing

v1.0: initial version created 08/23 by Dzhemma Ruseva, Ellie Gurini, Ciara Cormican as part of a University of St Andrews STEP project.

• v1.1: edited 05/24 by tdhc, and split into versions for both degrees and radians.

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