



QUESTION WORKBOOK

Reciprocal and inverse trigonometric functions

Trigonometry · Year 12–13

8 questions · 29 marks

PRINT EDITION

SECTION A · Warm-up

- A1** Define $\sec x$, $\operatorname{cosec} x$ and $\cot x$, and write down the exact values of $\sec 60^\circ$ and $\cot 45^\circ$. [3]

- A2** Starting from $\sin^2 \theta + \cos^2 \theta = 1$, derive the identity $\sec^2 \theta = 1 + \tan^2 \theta$. [2]

SECTION B · Standard

- B1** Given that $\tan \theta = 5/12$ and θ is acute, find the exact values of $\sec \theta$ and $\cos \theta$. [3]

- B2** Given that $\operatorname{cosec} \theta = 5/4$ and θ is acute, find the exact values of $\cot \theta$ and $\cos \theta$. [4]

B3 Solve $\sec x = 2$ for $0 \leq x < 360^\circ$. [3]

B4 State the range of values returned by $\arcsin$ and by $\arccos$, and evaluate $\arcsin \frac{1}{2}$, $\arccos(-1)$ and $\arctan 1$ exactly, in radians. [4]

SECTION C · Stretch

C1 Solve $2 \sec^2 x - 5 \tan x = 1$ for $0 \leq x < 360^\circ$, giving your answers to 1 decimal place. [6]

C2 Show that $\arctan(1/2) + \arctan(1/3) = \pi/4$.

[4]