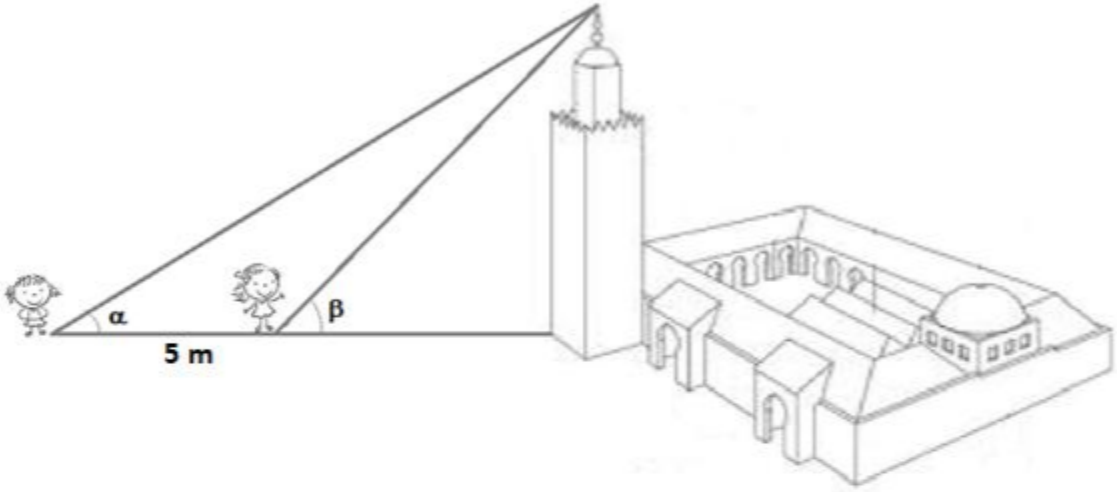
TRIGONOMETRY AND FUNCTIONS TEST – 4° ESO

Exercise 1: (1.5 ptos) Pam and Joan have borrowed a goniometer to measure the height of the tower of the Great Mosque of Córdoba. Knowing that they are standing 5 m away from each other, $\alpha = 74.48°$ and $\beta = 79.51°$, please, help them. $h = 54$ m



Exercise 2: (1.25 ptos) Find the three principal trigonometric functions (sine, cosine and tangent) of the angle $\frac{5\pi}{3}$, without using a calculator. $\sin\frac{5\pi}{3} = \frac{-\sqrt{3}}{2}$ $\cos\frac{5\pi}{3} = \frac{1}{2}$ $\tan\frac{5\pi}{3} = -\sqrt{3}$

Exercise 3: (1.25 ptos) If $\sin\alpha = 0.85$ and $\frac{\pi}{2} < \alpha < \pi$ find the other five trigonometric functions and the value of the angle α

$\cos\alpha = -0.53$ $\tan\alpha = -1.61$ $\sec\alpha = -1.89$ $\csc\alpha = 1.18$ $\cot\alpha = -0.62$ $\alpha = 121.79°$

Exercise 4: (1 pto) The seagull that the kids from the second grade keep as a pet in the class has flown away to the top of a near tree. Knowing that the distance between the tree and the high school is of 7.5 m and the tree is 5.2 m high, find the distance the seagull had to fly, without using Pythagoras' theorem. PS: The seagull starts off from the ground floor $d = 9.13$ m

Exercise 5: (2 ptos) Work out:

a) $\log_3 \frac{\sqrt{3}\,\sqrt[5]{81}}{\sqrt[6]{243}} = \frac{7}{15}$

b) $\frac{\log_5 875 - \log_5 7}{\log_5 50 - \log_5 2} = \frac{3}{2}$

c) $\frac{\log_7 4 + \log_7 16}{\log_7 160 - \log_7 5} = \frac{6}{5}$

Exercise 5: (1.25 ptos) Find the height of the Statue of Liberty (without the pedestal) knowing that Sühan is standing 25 m away from its base, $\alpha = 61.99°$ and $\beta = 74.95°$ **$h = 46$ m**

Exercise 7: (1.75 ptos) Sketch the graph of the piecewise function

$$f(x) = \begin{cases} \dfrac{1}{x+2} & -6 \le x < -2 \\ 2^x & -1 \le x < 2 \\ 8-2x & x > 2 \end{cases}$$

With a different color or a dashed line, plot the graph of $|f(x)|$