

FUNCTIONS AND TRIGONOMETRY TEST

4º ESO

Exercise 1: (2 ptos) Sketch the graph of the piecewise function:

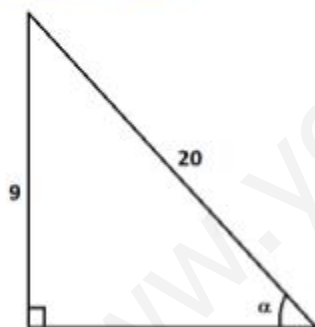
$$f(x) = \begin{cases} x+2 & x < 0 \\ \log_2 x & 0 < x \leq 4 \\ \frac{2}{x-4} & 4 < x < 12 \end{cases}$$

Exercise 2: (2.25 ptos) Work out using the properties of logarithms:

a) $\frac{\log_5 27 + \log_5 3}{\log_5 2187 - \log_5 81} =$

b) $\log_7 \frac{\sqrt{7} \cdot \sqrt[9]{49}}{\sqrt[5]{2401}} =$

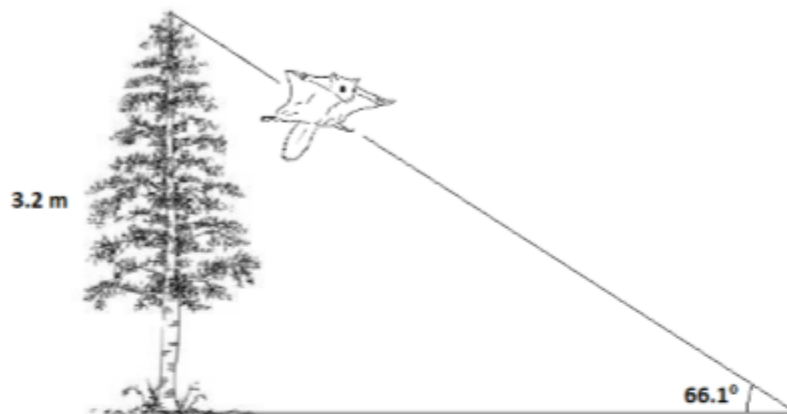
Exercise 3: (1.5 ptos) Find the six trigonometric functions of the angle α with four decimal figures



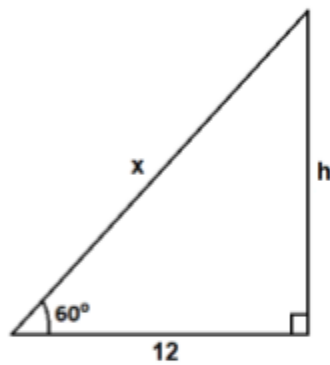
Exercise 4: (1.25 ptos) Find the area of a regular octagon with sides of length 14 cm.

Exercise 5: (1.25 ptos) If $\tan \alpha = 1.75$ find the values of $\sin \alpha$, $\cos \alpha$ and the angle α expressed using degrees, minutes and seconds. Round to four decimal figures.

Exercise 6: (0.75 ptos) My squirrel is learning to fly and since she knows a lot of Math, she wants to know the distance from the top of the tree to the ground, making a straight line (not vertical!!!). She measured the angle with the goniometry in her eyes and she got a value of 66.1° . Now she's ready to jump. Knowing that the height of the tree is of 3.2 m , do you think that she will make it?



Exercise 7: (1 pto) Find the lengths of the missing sides without using a calculator:





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Exercise 1: (2 ptos) Sketch the graph of the piecewise function:

$$f(x) = \begin{cases} x+2 & x < 0 \\ \log_2 x & 0 < x \leq 4 \\ \frac{2}{x-4} & 4 < x < 12 \end{cases}$$

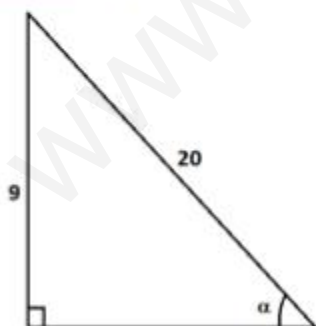


Exercise 2: (2.25 ptos) Work out using the properties of logarithms:

a) $\frac{\log_5 27 + \log_5 3}{\log_5 2187 - \log_5 81} = \frac{4}{3}$

b) $\log_7 \frac{\sqrt{7} \cdot \sqrt[3]{49}}{\sqrt[5]{2401}} = \frac{-7}{90}$

Exercise 3: (1.5 ptos) Find the six trigonometric functions of the angle α with four decimal figures:



$$\sin \alpha = 0.45 \rightarrow \csc \alpha = 2.2222$$

$$\cos \alpha = 0.45 \rightarrow \sec \alpha = 1.1198$$

$$\tan \alpha = 0.5039 \rightarrow \csc \alpha = 1.9844$$

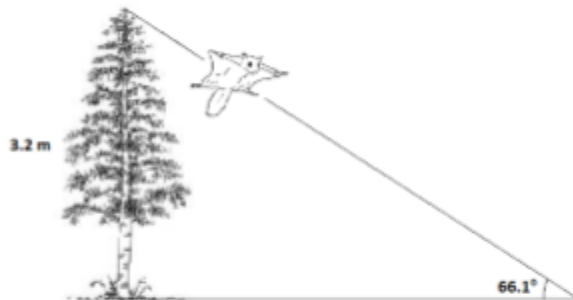
Exercise 4: (1.25 ptos) Find the area of a regular octagon with sides of length 14 cm $A_0 = 946.37 \text{ cm}^2$



Exercise 5: (1.25 ptos) If $\tan \alpha = 1.75$ find the values of $\sin \alpha$, $\cos \alpha$ and the angle α expressed using degrees, minutes and seconds. Round to four decimal figures.

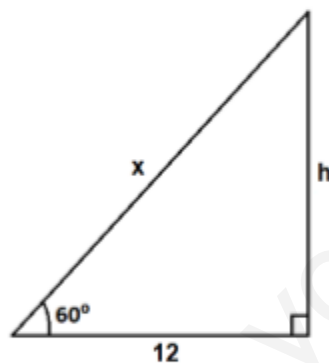
$$\cos \alpha = 0.2462 \quad \sin \alpha = 0.8682 \rightarrow \alpha = 60^\circ 15' 18''$$

Exercise 6: (0.75 ptos) My squirrel is learning to fly and since she knows a lot of Math, she wants to know the distance from the top of the tree to the ground, making a straight line (not vertical!!!). She measured the angle with the goniometry in her eyes and she got a value of 66.1° . Now she's ready to jump. Knowing that the height of the tree is of 3.2 m, do you think that she will make it?



$x = 3.5$ m, so I am sure that she will make it because I do trust my squirrel

Exercise 7: (1 pto) Find the lengths of the missing sides without using a calculator:



$$x = 24$$

$$h = 12\sqrt{3}$$

