



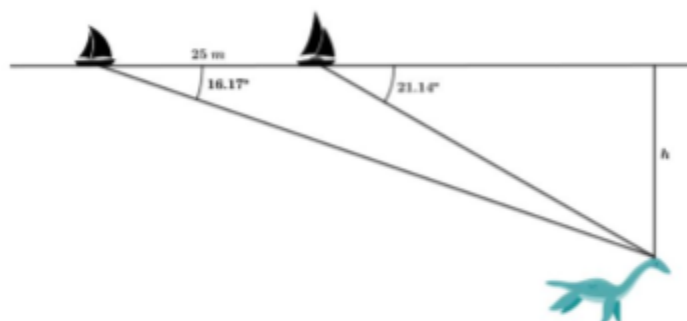
SECOND TERM GLOBAL TEST

4' ESO



Exercise 1: (1.5 points) Today we will finally reveal the mystery. Is really Nessie living at the bottom of Loch Ness? We have placed two boats near the point where we suspect her to live, with their goniometers ready, and yes, there's definitely something in there. Knowing that the distance between the ships is 25 m and the angles they have measured are 16.17° and 21.14° , at what depth do we have to dive in order to find her?

She's at a depth of 28.98 m but, why the hell won't you leave Nessie alone?



Exercise 2: (1 point) If $\sin \alpha = 0.85$ find the values of $\cos \alpha$ and $\tan \alpha$ and the angle α expressed in degrees, minutes and seconds $\cos \alpha = 0.5267$ $\tan \alpha = 1.6136$ $\alpha = 58^\circ 12' 42''$

Exercise 3: (1.25 points) Find the area and the perimeter of an isosceles triangle if base measures 19 cm and the opposite angle is 70° The area is 128.89 cm^2 and the perimeter, 52.13 cm

Exercise 4: (1.75 points) Work out the value of the following limits:

a) $\lim_{x \rightarrow 7} \frac{x^2 - 5x + 14}{x^2 - 49} = \cancel{A}$ (0.75)

b) $\lim_{x \rightarrow \infty} \left(5x - \frac{5x^2 - 3x - 1}{x - 2} \right) = -7$ (1)

Exercise 5: (2 points) Work out the domain and the asymptotes of these functions:

a) $f(x) = \frac{2x+3}{x^2-1} \rightarrow \text{Dom } f = \mathbb{R} - \{\pm 1\}$ AV $x = \pm 1$ AH $y = 0$ (0.75)

b) $f(x) = \frac{\sqrt{2x-1}}{x+3} \rightarrow \text{Dom } f = [1/2, +\infty)$ AV $\cancel{A}$ AH $y = 0$ (0.75)

c) $f(x) = \frac{7x^2-9x}{x^2+4} \rightarrow \text{Dom } f = \mathbb{R}$ AV $\cancel{A}$ AH $y = 7$ (0.5)

Turn the page around.



Exercise 6: (2.5 points) Given the following piecewise function:

- a) Indicate its domain
- b) Indicate its asymptotes
- c) Sketch its graph
- d) With a different color or a dotted line, indicate the function $|f(x)|$

$$f(x) = \begin{cases} -5 & -10 \leq x < -1 \\ \log_2 x & 0 < x < 4 \\ \frac{4}{x-8} & x \geq 4 \end{cases}$$

