

HOLY CROSS HIGH SCHOOL



GRADE 11

MATHEMATICS ASSIGNMENT :

NAME	
SURNAME	
CLASS	
DATE	

Duration : 4 days

Marks : 50

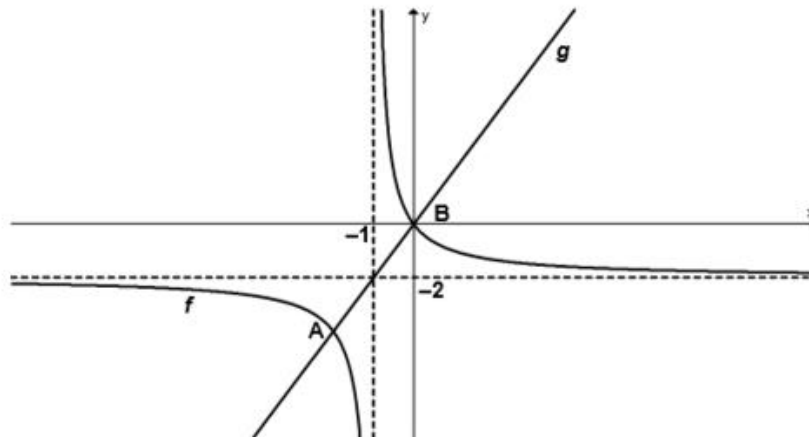
Examiner : M Mutandwa

Moderator: M Smith

QUESTION 1

The sketch shows the graphs of $f(x) = \frac{a}{x-p} + q$ and $g(x) = 2x$.

A and B are the points of intersection of f and g .



- 1.1 Determine the value of a , p and q . (3)
- 1.2 Write down the domain and range of f . (2)
- 1.3 Calculate the coordinates of A. (4)
- 1.4 Determine the value(s) of x for which:
 - 1.4.1 $f(x) \geq g(x)$ (2)
 - 1.4.2 $g(x) < 0$ (1)

QUESTION 2

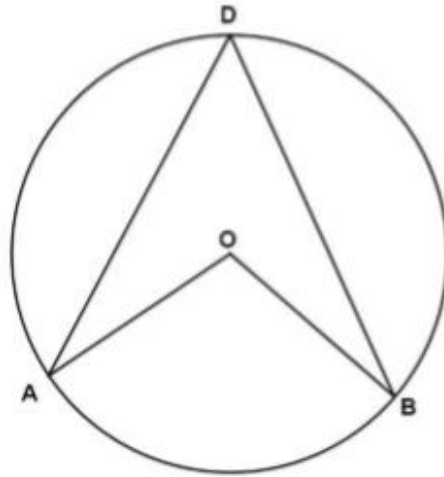
Consider the function $f(x) = -3 \cdot 2^{-x+1} + 12$

- 2.1 Write down the equation of the asymptote of f . (1)
- 2.2 Write down the range of f . (1)
- 2.3 Calculate the coordinates of the intercepts of f with the axes. (3)
- 2.4 Sketch the graph of f , indicating all the intercepts with the axes and the asymptote. (3)
- 2.5 Determine the value(s) of x for which $f(x) > 0$ (2)
- 2.7 Determine the range of g , if $g(x) = 2 - f(x)$ (2)

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QUESTION 3

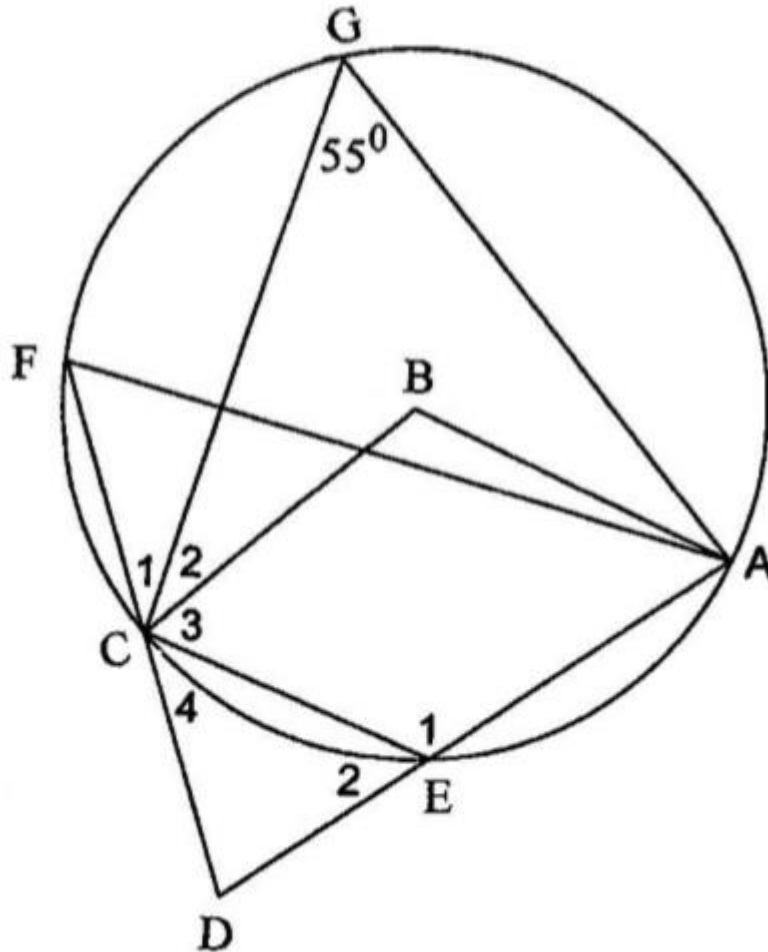
Given: O is the centre of circle ABD.



Prove the theorem which states that $\angle AOB = 2\angle ADB$. (5)

QUESTION 4

- 4.2 Given: B is the centre of circle AGFCE . AE produced and FC produced meet in D. $DA=DF$ and $\angle G = 55^\circ$.



With reasons, calculate:

- 4.2.1 $\angle ABC$ (2)
 4.2.2 $\angle E_2$ (2)
 4.2.3 $\angle F$ (2)
 4.2.4 $\angle C_4$ (3)
 4.2.5 Prove that $CD = DE$. (2)
 4.2.6 Prove that ABCD is a cyclic quadrilateral. (3)

[19]