MULTIMEDIA UNIVERSITY

SECOND TRIMESTER, **2020/2021 SESSION**

TEST 2 (AFE)
MATHEMATICS I
(PMT0101)

4th March 2021
2.00 p.m. – 3.30 p.m.
(1 hour 30 minutes)

Name :_____

ID : _____

Group : _____

Question	Mark
1	**/7**
2	**/13**
3	**/10**
Total	**/30**

Score	
Format (PDF)	
Presentation (Neat)	
File Naming	
Late	
Total	

INSTRUCTIONS TO STUDENT

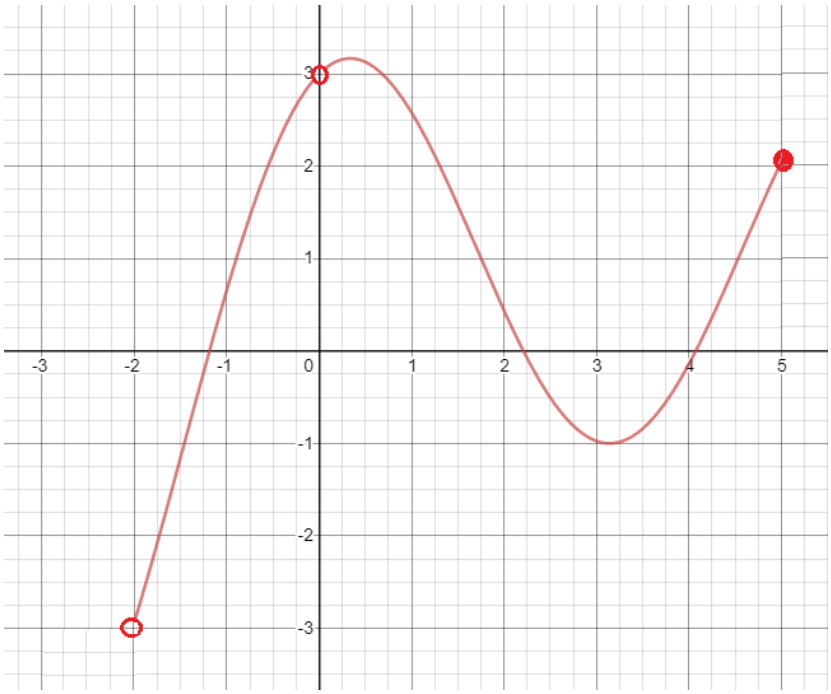
1) Show **intermediate** working steps in order to obtain maximum scores.
2) Working steps have to be **handwritten**, not typewritten.
3) Before submitting, make sure you go through your work to ensure it is **neat and legible**.
4) Make sure you write your full name and ID number on the first page of your script.
5) Name this file as follows: **<your ID no.>_Test 2 (AFE)**, for example 1234567890_Test 2 (AFE).
6) Submit via Google Classroom in **PDF** format.

Question 1

a) Find the domain for $f(x)=\dfrac{5}{x^2-16}$. Express your answer in interval notation form.

[2 marks]

b) The graph of a function h is given below.

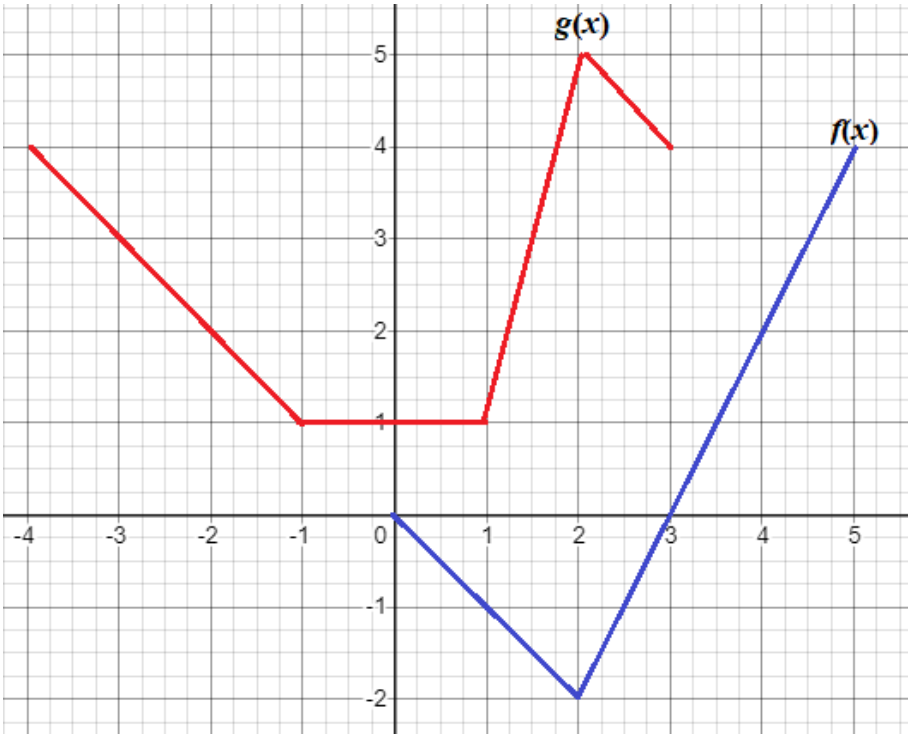


i) Find $h(0)$. [0.5 marks]

ii) State the domain of h. Express your answer in interval notation form. [1 mark]

iii) Find the value of x for which $h(x)=-2$. [0.5 marks]

c) Use the given graphs of f and g to evaluate the following expressions.



i) $(f \circ g)(-3)$ [1 mark]

ii) $(f + g)(2)$ [1 mark]

iii) $(fg)(1)$ [1 mark]

Question 2

a) Given the polynomial function $f(x) = x(x+2)(x+1)^2(x-1)^3$.

i) What is the degree of f ? [0.5 marks]

ii) Determine the zeros of f and their multiplicities. Also, determine whether the graph of f crosses or touches the *x*-axis at each zero. [4 marks]

iii) Determine the end behavior of f. [1 mark]

iv) Sketch the graph of the polynomial f function. Make sure your graph shows all intercepts CLEARLY and exhibits proper end behaviour. [2.5 marks]

b) Use long division to find the quotient and remainder when the polynomial $f(x) = 2x^4 - 3x^2 - x + 5$ is divided by $x - 1$. You are required to state clearly the quotient and the remainder. [3 marks]

c) Without calculator, evaluate $\log_9 \sqrt{3}$. [1.5 marks]

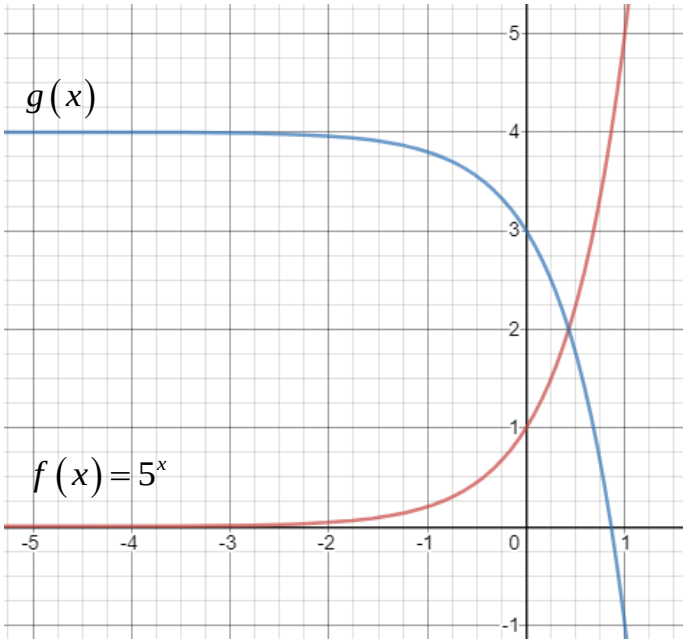
Question 3

a) Solve $\ln(x-1)+2\ln 2=1$. Leave your answer in a single quotient. [2.5 marks]

b) Solve the equation $3e^{5-3x}=18$. Leave your answer in exact value. [2 marks]

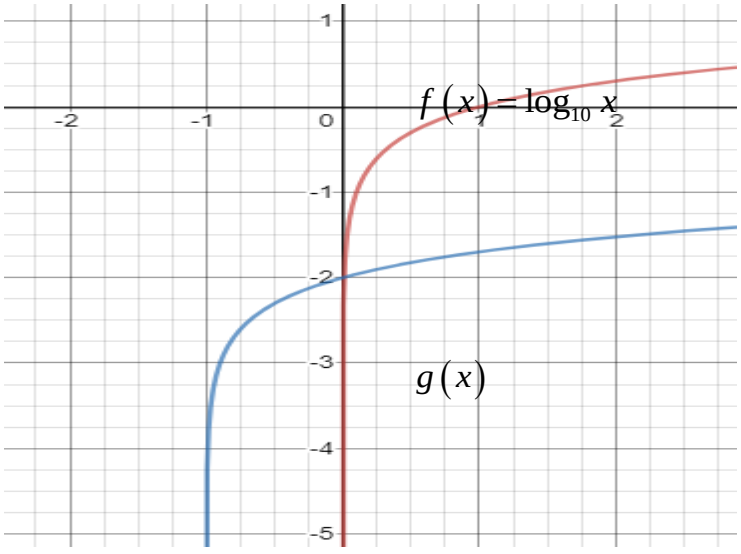
c) The graphs f and g are given. Find a formula for the function g for each of the graph below.

i)



[2 marks]

ii)



[2 marks]