MULTIMEDIA UNIVERSITY

SECOND TRIMESTER, **2020/2021 SESSION**

TEST 1 (AFE)
MATHEMATICS I
(PMT0101)

11th March 2021
2.00 p.m. – 3.15 p.m.
(1 hour 15 minutes)

Name :_____

ID : _____

Question	Mark
1	**/4**
2	**/8**
3	**/8**
Total	**/20**

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 1 (AFE)**, for example 1234567890_Test 1 (AFE).
6) Submit via Google Classroom in **PDF** format.

Question 1

a) Rationalize the numerator for $\dfrac{\sqrt{2}-3}{\sqrt{2}+3}$. (2 marks)

b) Simplify the expression $\dfrac{x^3+3x^2+4x+12}{x^2-9}$. (2 marks)

Question 2

a) Find the value of q given the equation has one real solution.

$$x^2+4x+q=0$$ (1 mark)

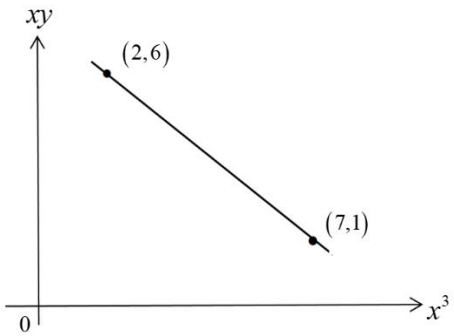
b) Given the length and width of a rectangle are x and $\sqrt{2+x}$, respectively. Find the value(s) of x if the perimeter of the rectangle is 20 units^2. (3 marks)

c) Find the domain of $h(x)=\dfrac{x-1}{\sqrt{x^2-x-6}}$. Note: Show clearly your Sign Diagram and give your final answer in interval notation. (4 marks)

Question 3

a) Find an equation of the line that passes through the point $(0,3)$ and the centre of the circle, $3x^2+3y^2+6x-12y-9=0$. Express the line equation in the slope-intercept form. (4.5 marks)

b) Two variables, x and y are related by an equation $y=ax^2+\dfrac{b}{x}$ where a and b are constants. The figure below shows the linear line graph by plotting $Y=xy$ against $X=x^3$. The linear line passes through the points $(2,6)$ and $(7,1)$.



Find the values of a and b. (3.5 marks)