



DHOFAR UNIVERSITY
FOUNDATION PROGRAM | MATH UNIT
FPM 102 –Math Level 2 (Pure)
Model Paper Mid term
Term (2023-24)

Student Name									
Student ID									Date:
Section									Duration: 1 hour 30 minutes
Teachers									

Instructions:

- 1) The exam has four main questions with a scratch sheet.
- 2) Please turn off your mobile phone.
- 3) Use only a blue or black pen.
- 4) No talking, passing objects or looking in the direction of another student's paper. Any of these behaviors will be considered cheating.

Dhofar University's Academic Integrity Policy (Policy No. DU-AC-007) is intended to foster hard work, honesty, and responsibility. It strictly prohibits all forms of academic misconduct, including cheating and collusion, plagiarism, and impersonation.

By reading this pledge, I affirm that I have upheld the AIP and that my submitted work is my own and therefore free of any form of cheating.

تهدف سياسة النزاهة الأكاديمية بجامعة ظفار (السياسة رقم DU-AC-007) إلى تعزيز العمل الجاد والأمانة والمسؤولية وتحظر تماماً جميع الأشكال التي تخالف النزاهة الأكاديمية، بما في ذلك الغش والتواطؤ والسرقة الأدبية والانتحال.

من خلال قراءتي لهذا التعهد أؤكد أنني ملتزم بسياسة النزاهة الأكاديمية و أن عملي هذا هو خاص بي ويخلو من أي شكل من أشكال الغش.

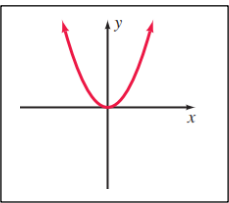
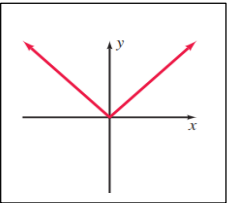
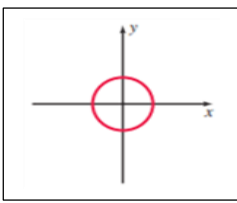
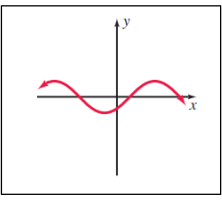
Student's Signature: _____

Marking Grid

	Question 1	Question 2	Question 3	Question 4	
Question	MCQ's (out of 7)	(out of 8)	(out of 7)	(out of 8)	Total / 30 marks
Marks obtained					

Marker's name:		Moderator's name:	
Marker's signature:		Moderator's signature:	
Date:		Date:	

Question 1: MULTIPLE CHOICE. Circle the correct answer. (7 Marks)

1)	<p>Which one of the following sets represents a function?</p> <p>(a) $\{(1, 5), (2, 5), (3, 5), (4, 5)\}$ (b) $\{(2, 5), (2, -5), (3, 5), (3, -5)\}$</p> <p>(c) $\{(1, 5), (2, 1), (3, 1), (1, -5)\}$ (d) $\{(1, -1), (2, -2), (3, -3), (3, -5)\}$</p>
2)	<p>If $f(x) = \frac{\sqrt{2x+8}}{x}$, Then $f(-2) =$</p> <p>(a) 2 (b) 1 (c) -2 (d) -1</p>
3)	<p>The graph which does not represent a function is:</p> <p>a)  b)  c)  d) </p>
4)	<p>The domain of the function $\frac{-2x}{x^2 - 9}$ is:</p> <p>(a) $R \setminus \{3\}$ (b) $R \setminus \{3, -3\}$ (c) $R \setminus \{-3\}$ (d) R</p>
5)	<p>$\log_3 9 + \log_3 3 - \log_3 1 =$</p> <p>(a) 1 (b) 2 (c) 3 (d) 0</p>
6)	<p>If $\log_5(x + 2) + \log_5 4 = \log_5 12$, then $x =$</p> <p>(a) 1 (b) 4 (c) 5 (d) $x + 2$</p>
7)	<p>If $2e^{7x} = 10$, then $x =$</p> <p>(a) $\frac{\ln 10}{7}$ (b) $\frac{\ln 5}{7}$ (c) $\log 10 - 7$ (d) $\log 2$</p>

Question 2:**(8 Marks)**

- a) Find the domain of function $f(x) = \frac{x}{x^2 - 8x - 9}$ (5 marks)

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- b) Without graphing, determine whether the given equation has a graph that is symmetric with respect to the x-axis, the y-axis, the origin, or none of these. (3 marks)

$$y = 1 - 3x^2$$

Symmetry with respect to x – axis	Symmetry with respect to y – axis	Symmetry with respect to origin

Question 3:

(7 Marks)

a) Solve exponential equation: $\frac{5^{2x+3}}{5^{x-2}} = 25$ (4 marks)

b) Find the value of x for the nearest hundredth.

$$2^{3x+1} - 3 = 4$$
 (3 marks)

Question 4:

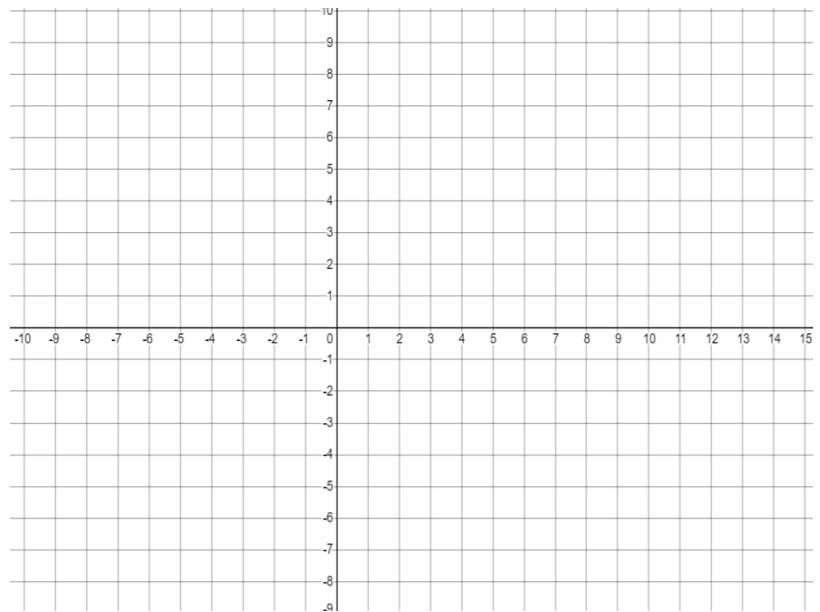
(8 Marks)

c) A sample of 300 grams of radioactive substance decays according to the function $A(t) = 300e^{-0.013t}$, where t is the time in years.

(i) How much of the substance will be left in the sample after 10 years? (1 mark)

(ii) After how long 200 grams of substance will remain? (2 Marks)

(b) Graph the function $f(x) = \log_3(x - 2)$: (5 Marks)



SCRATCH SHEET

Name: _____

Note:

1. This scratch sheet will not be marked.
2. Do not detach it from the rest of exam papers.