

Notes : Answer ALL questions, the use of a calculator is UNAUTHORIZED, & each question has 25 marks.

Q1/ Find the domain and the range of the following functions: (Do FIVE only).

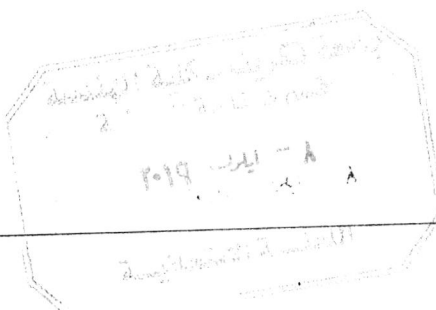
1. $y = x^2 - 1$
2. $y = \sqrt{x^2 + 9}$
3. $y = \frac{2x}{x-5}$
4. $y = -3 \cos^2 x$
5. $y = \sqrt{1 - \sin x}$
6. $y = -x^2$

Q2/ Solve the following: (Do FIVE only).

1. $\log_5 125$
2. $\lim_{x \rightarrow 0} \frac{3x}{\tan 2x}$
3. $y = |x + 5| - 3$
4. $|2x - 5| \leq 1$
5. $|5x - 2| \geq 2$
6. $\lim_{x \rightarrow \infty} \frac{x + \sin x}{x + \cos x}$

Q3/ Identify the following functions either even or odd ones: (Do FIVE only).

1. odd \pm even
2. $f(x) = x^3$
3. $f(x) = \tan x$
4. $f(x) = x^2 \sin^2 x$
5. $f(x) = \frac{x+2}{x^2+1}$
6. $f(x) = f(-x)$

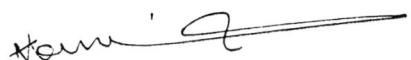


Q4/ Answer the following:

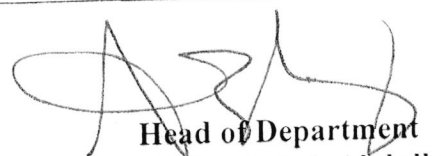
Q4/ (A) / If the point (2,K) lies on the line with a slope (m=3) and passing through the point (1,6). Find the value of K.

Q4/ (B) / Is the following function is continuous at $x = 1$?

$$f(x) = \begin{cases} x^2 - 1, & x < 1 \\ 0, & x = 1 \\ x, & x > 1 \end{cases}$$


Examiner
Dr. Haneen A. KH. Karaghool

Good Luck


Head of Department
Prof. Dr. Aziz I. Abdulla