

Course No: PHRM1307
Course Title: Applied Math.
Date: 16/1/2018
No. of Questions: (5)
Time: 2hours
Using Calculator (Yes)

University of Palestine



Final Exam
2017/2018
Total Grade:50

Instructor Name: _____
Student No.: _____
Student Name: _____
College Name: Pharmacy College
Dep. / Specialist: _____
Using Dictionary (No)

Question One: (10Marks)

(a) Find $\frac{dy}{dx}$ if $e^{xy} + y \ln x = \cos 2x$

(b) Find the value of c that satisfy the Mean value theorem for the function $f(x) = \sin^{-1} x$ and interval $[-1,1]$

(c) Find $\int \operatorname{cosec}^4 x dx$

Question Two: (10Marks)

(a) Determine the concavity of $f(x) = xe^{-x}$

(b) Find the volume of solids generated by revolving the region bounded by the line $y = 2 - x$ and $y = 4 - x^2$

(c) Find $\frac{dy}{dx}$ if $y = \int_0^{e^{x^2}} \frac{1}{\sqrt{t}} dt$

Question Three: (10Marks)

(a) Find the critical points of $f(x) = x^3 - 6x^2 + 9x - 8$.

Identify the intervals on which $f(x)$ is increasing and decreasing and find the functions local extreme values.

(b) Find $\frac{dy}{dx}$ if $y = x^{\sin 3x}$

(c) Find $\int \frac{2x-3}{x^2+6x+13} dx$

Question Four: (10Marks)

(a) Evaluate $\int_0^{\frac{\pi}{3}} \frac{\tan x}{\sqrt{3}\sec x} dx$

(b) Prove that $\int \frac{dx}{1-\sin\frac{x}{2}} = 2\left(\tan\frac{x}{2} + \sec\frac{x}{2}\right) + c$

(c) Find the area of the region enclosed by the curves

$$y = 4 - 4x^2 \quad \text{and} \quad y = x^4 - 1$$

Question Five: (10Marks)

(a) Find $\frac{dy}{dx}$ If $y = x^2 \sin 3x + 2x \cos^{-1} 2x$

(b) Find $\int \sin^4 3x \cos^2 3x dx$

(c) Find the length of the curve $x = \frac{y^3}{6} + \frac{1}{2y}$

From $y=2$ to $y=3$.

End of Questions

Good Luck