

Course No:
Course Title: Calculus II
Date: 22/10/2017
No. of Questions: (2)
Time: 1.00hour
Using Calculator (yes)

University of Palestine



First Mid. Exam
2017/2018
Total Grade:15

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

Question One:

6 points

$$f(x) = 2x^3 + 1$$

a) Show that $f(x)$ is one-to-one.

b) Find the inverse function of $f(x)$ and state its domain and range.

c) Show that $f(f^{-1}(x)) = x$

Question Two:

14 points

a) Find $\frac{dy}{dx}$, $\ln \frac{1}{x^2 \sqrt{x^2+4}}$

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b) $f(x) = \sqrt{1+x^4}$ Find $\frac{df^{-1}}{dx}$ at $x=f(1)$

c) find the value of the following integrations

$$\int_0^{\frac{\pi}{3}} \frac{4\sin(x)}{1-4\cos(x)} dx$$

d) Use the properties of natural logarithm to simplify

$$\ln(3x^4 - 6x^2) + \ln\left(\frac{1}{3x}\right) = -\ln\frac{1}{x^2}$$