



University of Technology
Department of Computer Sciences
2nd Course / 2nd trial 2016 -2017
Final -Exam

الموقع



Subject: Mathematics

Examiner: Dr. Abdul Mohssen Almaali
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Class: First

Date: / /2017

Time: Hours

ملاحظة: الاجابة على خمسة اسئلة فقط. (14 درجة لكل سؤال)

Q1) Find $\frac{dy}{dx}$ of the following (Answer four only)

(1) $y = (\sec(x))^2 \cdot e^{x^2}$ (2) $y = x^{\ln(x)}$ (3) $y = \sec^{-1}(\sqrt{x})$
(4) $y = \frac{3x^2 \cdot \sin^{-1}(x)}{\tan^2(2x+1)}$ (5) $y^2 = \tan(x+y) + 2x$

Q2) Find Tayler series for the function:

(1) $f(x) = x^4 + 3x^2$ & $a=2$ (2) $f(x) = \sin(x)$ & $a=\pi$

Q3) find the following integrals (Using integrating method)

(Answer two only):-

(1) $\int x \sin(x) dx$ (2) $\int \frac{dx}{x^2+x-6}$ (3) $\int \frac{dX}{\sqrt{x^2-9}}$

Q4) a- Find the area between two curves. Sketch. ($y=x^2$, and $y=2-x$)

b- find $(\frac{dy}{dx})$ by using chian rule if $y = \frac{2t^2+t}{t+1}$ & $t = e^{x^2+2}$

Q5) evaluate the integral (answer two only)

(1) $\int \frac{\ln(x)dx}{x}$ (2) $\int x(2x^2+3)^3 dx$ (3) $\int \tan(x) dx$

Q6) Using L-Hospitals' Rule to find

1- $\lim_{x \rightarrow 0} \frac{x \cos(x) - x}{\sin(x) - x}$

2- $\lim_{x \rightarrow 0} \frac{\sin x}{x}$

3- $\lim_{x \rightarrow 0} (\frac{1}{x} - \frac{1}{\sin x})$

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