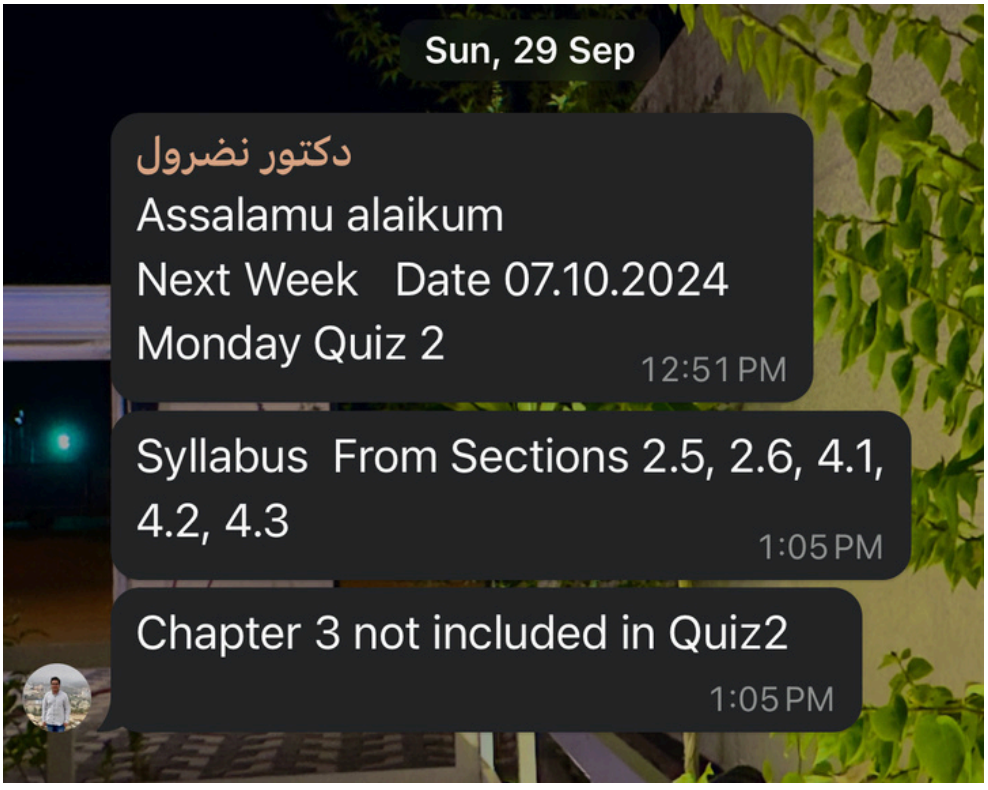
MATH218

Quiz 2

462

التحديد :



Kingdom of Saudi Arabia
Ministry of Higher Education
College of Computer
Department of Computer Engineering

Qassim University جامعة القصيم

Quiz 2 (1446-1445) 461
Course: Math-218
Time: 10 Min.
Total marks: 5
Date: 07.10.2024

Name: ID:

Answer all questions:

1. A differential equation of the $\frac{dy}{dx} + P(x)y = f(x)y^n$ is said to be **(1 Mark)**

   (a) Cauchy-Euler Equation (b) Bernoulli's Equation
   (c) Separable Equation (d) None of these

2. The solution of the differential equation $y - xy' = \ln y'$ is **(1 Mark)**

   (a) $c - xy' = \ln y'$ (b) $y - xc = \ln y'$ (c) $y - xc = \ln c$ (d) $c - cy' = \ln y'$

3. Solve $y''' = 0$. **(1 Mark)**

   A.E. $m^3 = 0 \Rightarrow m = 0, 0, 0$

   $y = c_1 + x c_2 + x^2 c_3$

4. Show by computing the Wronskian that the given functions are linearly independent on the on the indicated interval. $f_1 = e^x$, $f_2 = e^{2x}$, $(-\infty, \infty)$. **(2 Marks)**

Sol:

$$W = \begin{vmatrix} f_1 & f_2 \\ f_1' & f_2' \end{vmatrix}$$

$$W = \begin{vmatrix} e^x & e^{2x} \\ e^x & 2e^{2x} \end{vmatrix}$$

$$= 2e^x e^{2x} - e^x e^{2x}$$

$$W = e^{3x} \neq 0$$

So, f_1, f_2 are L.I.