

King Saud University
College of Sciences
Department of Mathematics
First Semester (1434/1435)
M-106
Second Midterm-Exam

Programmable Calculators are Not Authorized

The Exam paper contains 5 pages
(5 Multiple choice questions and 5 Full questions)

Name:	Number:
Name of Teacher:	Group No:

Max Marks: 25

Time: 90 minutes

Marks:

Multiple Choice (1-5)	
Question # 6	
Question # 7	
Question # 8	
Question # 9	
Question # 10	
Total	

Multiple Choice

Q.No:	1	2	3	4	5
{a, b, c, d}					

Q. No: 1 The substitution $u = \sqrt{1+2x}$ convert the integral $\int \frac{2x+3}{\sqrt{1+2x}} dx$ into:

(a) $\int \frac{u^2+2}{u} du$ (b) $\int (u^2+2) du$ (c) $\int \frac{u^2-2}{u} du$ (d) $\int (u^2-2) du$

Q. No: 2 If $\frac{x^5+2}{x^2-1} = Ax^3 + Bx + \frac{C}{x-1} + \frac{D}{x+1}$ then:

(a) $B = 1, C = \frac{3}{2}$ (b) $B = 1, C = -\frac{3}{2}$ (c) $B = -1, C = -\frac{3}{2}$ (d) $B = 1, C = -1$

Q. No: 3 The Integral $\int \ln(x^3) dx$ is equal to

(a) $x \ln(x) - 3x + c$ (b) $3x \ln(x) - x + c$ (c) $3x \ln(x) + 3x + c$ (d) $3x \ln(x) - 3x + c$

Q. No: 4 $\lim_{x \rightarrow \infty} (x^{\frac{1}{x^2}})$ is equal to

(a) 1 (b) 0 (c) $-\infty$ (d) ∞

Q. No: 5 To evaluate the integral $\int \frac{1}{x\sqrt{4x^2+16}} dx$, we use the substitution:

(a) $x = 2 \sec(\theta)$ (b) $x = 2 \tan(\theta)$ (c) $x = 2 \cos(\theta)$ (d) $x = 2 \sin(\theta)$

Full Questions

Question No: 6. Evaluate $\int_1^{\infty} xe^{-x} dx$

[4]

Question No: 7. Evaluate $\int \frac{x-2}{x^2-2x+5} dx$

[4]

Question No: 8. Evaluate the integral $\int \frac{x^2}{(4-x^2)^{\frac{3}{2}}} dx$ [4]

Question No: 9. Evaluate the integral $\int \frac{2}{x^3 - 2x^2 + x} dx$ [4]

Question No: 10. Sketch the region R bounded by $y = x^2 - 1$, $y = 0$. And find the area of R . [4]