Mohamed Khider Biskra University
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Biology department

Module:Math and Stat
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Level: Licence 1

Serie N02

Exercise 01: Evaluate the following integrals:

1. $\int \frac{x}{\sqrt{25-x^2}}dx$; 2. $\int \frac{x+1}{x^2}dx$; 3. $\int x\cos(x^2)dx$

4. $f_4(x) = \int \frac{1}{x\ln(x)}dx$; 5. $\int \sin(2x)dx$; 6. $f_6(x) = \int \sqrt{2x+3}dx$.

Exercise 02: Calculate the following integrals:

1. $\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \cos(x)dx$; 2. $\int_1^4 (x^2+2x-1)dx$;3. $\int_{e^1}^{e^2} \frac{1}{x\ln(x)}dx$.

Exercise 03: Evaluate the following integrals by using integration by part:

1. $\int x^2\ln(x)dx$; 2. $\int x\exp(-x)dx$; 3. $\int \left(\frac{\ln(x)}{x}\right)^2 dx$

4. $\int x\sin^2(x)$; 5. $\int e^x cox(x)dx$; 6. $\int \sin(\ln(x))dx$.

Exercise 04: Evaluate the following integrals by substitution (change of variable)

1. $\int \frac{dx}{\sqrt{2-5x}}$; 2. $\int \frac{x}{\sqrt{4x+5}}dx$; 3. $\int x\sqrt{x-1}dx$

4. $\int \frac{x}{\sqrt{1-x^2}}dx$; 5. $\int \frac{e^x}{2+e^x}dx$; 6. $\int \frac{(\ln(x))^2}{x}dx$.

Exercise 05: Evaluate the following integrals of rational functions:

1. $\int \frac{x^2}{1-x^2}dx$; 2. $\int \frac{dx}{(1+x)(1+x^2)}$;

3. $\int \frac{dx}{x^2+2x-3}$; 4. $\int \frac{4-2x}{(x^2+1)(x-1)^2}dx$.