UNIVERSITY OF MOHAMED KHIDER BISKRA
FACULTY OF EXACT SCIENCES AND NATURAL AND LIFE SCIENCES
TCSNV DEPARTMENT

SECOND WORKSHEET: INTEGRALS

First Year

Exercise 1

Evaluate the following integrals:

1. $\displaystyle\int \frac{x}{\sqrt{25-x^2}}\,dx$
2. $\displaystyle\int \frac{x+1}{x^2}\,dx$
3. $\displaystyle\int x\cos(x^2)\,dx$
4. $\displaystyle\int \frac{1}{x\ln(x)}\,dx$
5. $\displaystyle\int \sin(2x)\,dx$
6. $\displaystyle\int \sqrt{2x+3}\,dx$
7. $\displaystyle\int \frac{x}{2-2x^2}\,dx$

Exercise 2

Using properties of integrals, evaluate:

1. $\displaystyle\int_{-2}^{2}\left(x^5-3x^3+\sin(x)\right)\,dx$
2. $\displaystyle\int_{-1}^{1}\left(3x^2+5\right)\,dx$
3. $\displaystyle\int_{\frac{\pi}{4}}^{\frac{\pi}{2}}\cos(x)\,dx$
4. $\displaystyle\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}}\tan(x)\,dx$

Exercise 3

Evaluate the following integrals by using integration by parts:

1. $\displaystyle\int x\exp(-x)\,dx$
2. $\displaystyle\int e^x\cos(x)\,dx$
3. $\displaystyle\int x^2\ln(x)\,dx$

Exercise 4

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

1. $\displaystyle\int \frac{dx}{\sqrt{2-5x}}$
2. $\displaystyle\int \frac{e^x}{2+e^x}\,dx$
3. $\displaystyle\int \frac{(\ln(x))^2}{x}\,dx$