

Ch.8 Techniques of Integration:-

Some integral Formulas:-

$$\boxed{1} \int a \, dx = ax + c$$

$$\boxed{2} \int a x^n \, dx = \frac{a x^{n+1}}{n+1} + c, n \neq -1$$

$$\boxed{3} \int \frac{a}{x} \, dx = a \ln|x| + c$$

$$\boxed{4} \int \frac{f'(x)}{f(x)} \, dx = \ln|f(x)| + c$$

$$\boxed{5} \int e^{ax} \, dx = \frac{e^{ax}}{a} + c$$

$$\boxed{6} \int a^x \, dx = \frac{a^x}{\ln a} + c$$

$$\boxed{7} \int \sin(ax) \, dx = -\frac{1}{a} \cos(ax) + c$$

$$\boxed{8} \int \cos(ax) \, dx = \frac{1}{a} \sin(ax) + c$$

$$\boxed{9} \int \tan x \, dx = \ln|\sec x| + c$$

$$\boxed{10} \int \cot x \, dx = \ln|\sin x| + c$$

$$\boxed{11} \int \sec x \, dx = \ln|\sec x + \tan x| + c$$

$$\boxed{12} \int \csc x \, dx = -\ln|\csc x + \cot x| + c = \ln|\csc x - \cot x| + c$$

$$\boxed{13} \int \sec^2 x \, dx = \tan x + c$$

$$\boxed{14} \int \csc^2 x \, dx = -\cot x + c$$

$$\boxed{15} \int \sec x \tan x \, dx = \sec x + c$$

$$\boxed{16} \int \csc x \cot x \, dx = -\csc x + C$$

$$\boxed{17} \int \cosh(ax) \, dx = \frac{\sinh(ax)}{a} + C$$

$$\boxed{18} \int \sinh(ax) \, dx = \frac{\cosh(ax)}{a} + C$$

$$\boxed{19} \int \operatorname{sech}^2 x \, dx = \tanh x + C$$

$$\boxed{20} \int \operatorname{csch}^2 x \, dx = -\coth x + C$$

$$\boxed{21} \int \operatorname{sech} x \tanh x \, dx = -\operatorname{sech} x + C$$

$$\boxed{22} \int \operatorname{csch} x \coth x \, dx = -\operatorname{csch} x + C$$

$$\boxed{23} \int \frac{1}{\sqrt{a^2 - x^2}} \, dx = \sin^{-1}\left(\frac{x}{a}\right) + C$$

$$\boxed{24} \int \frac{1}{a^2 + x^2} \, dx = \frac{1}{a} \tan^{-1}\left(\frac{x}{a}\right) + C$$

$$\boxed{25} \int \frac{1}{x \sqrt{x^2 - a^2}} \, dx = \frac{1}{a} \sec^{-1}\left(\frac{|x|}{a}\right) + C$$

Mathematics Department
Math 1411 - Worksheet #10

Chapter 8

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Q. Evaluate the following Integral:

$$\boxed{1} \int \cos(\sqrt[3]{x}) dx$$

$$\boxed{2} \int x^2 \cosh 2x dx$$

$$\boxed{3} \int \sin x \cos^4 x dx$$

$$\boxed{4} \int_0^{\pi/2} x \sqrt{1 - \cos(2x)} dx$$

Short Answers Worksheet #10

Q1 $I = 3 x^{2/3} \sin(x^{1/3}) + 6 x^{1/3} \cos(x^{1/3}) - 6 \sin(x^{1/3}) + C$

2 $I = \frac{1}{2} x^2 \sinh(2x) - \frac{x \cosh(2x)}{2} + \frac{1}{4} \sinh(2x) + C$

3 $I = -\frac{1}{5} \cos^5(x) + C$

4 $I = \sqrt{2}$