MT-119 Calculus & Analytical Geometry

Assignment No # 4

Note: Last date for the submission of assignment is 21-05-2020.

Question # 1

Determine a reduction formula for

$$\int_0^{\pi/2} sin^n x\, dx$$

and use the reduction formula to evaluate

$$\int_0^{\pi/2} sin^6 x\, dx$$

Question # 2

Determine a reduction formula for

$$\int_0^{\pi/2} cos^n x\, dx$$

and use the reduction formula to evaluate

$$\int_0^{\pi/2} Cos^5 x\, dx$$

Question # 3

Determine a reduction formula for

$$\int tan^n x\, dx$$

and use the reduction formula to evaluate

$$\int tan^7 x\, dx$$

Question # 4

Evaluate

$$\int_0^{\pi/2} sin^2 x.cos^6 x\, dx$$

Question # 5

Evaluate the following integral by Partial Fraction

$$\int \frac{dx}{a^2 - x^2}$$

And use the answer to evaluate

$$\int_0^2 \frac{5}{9 - x^2} dx$$

Question # 6

Evaluate the following integral by putting $x = asin\theta$

$$\int \frac{dx}{\sqrt{a^2 - x^2}}$$

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Question # 7

Evaluate

$$\int_0^4 \sqrt{16 - x^2}\, dx$$

Question # 8

Evaluate the following integral by putting $x = a\tan\theta$

$$\int \frac{dx}{a^2 + x^2}$$

Also evaluate

$$\int_0^2 \frac{dx}{4 + x^2}$$
