Related Problems by using Properties of Definite Integral

SUBJECT : MATHEMATICS
CHAPTER NUMBER:7
CHAPTER NAME :INTEGRALS

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Problem-1

By using properties of definite integral Evaluate

$$\int_0^{\pi/2} log(sin\, x)\, dx$$

Problem-2

By using properties of definite integral Evaluate

$$\int_0^{\pi/4} log(1 + tan\, x)\, dx$$

Problem-3

By using properties of definite integral Evaluate

$$\int_0^{\pi/2} \frac{\sin x - \cos x}{1 + \sin x \cos x} dx$$

Problem-4

By using properties of definite integral Prove that

$$\int_{-1}^{1} log\left(\frac{2-x}{2+x}\right) dx = 0$$

Problem-5

By using properties of definite integral evaluate

$$\int_0^{\pi} \frac{x \sin x}{1 + cos^2 x} dx$$

Problem-6

By using properties of definite integral evaluate

$$\int_0^{\pi} \frac{x}{a^2 \cos^2 x + b^2 \sin^2 x} dx$$

Assignments

Evaluate the following integrals

(a) $\int \left(\sqrt{\cot x} + \sqrt{\tan x}\right) dx$

(b) $\int sec^3 x \, dx$

(c) $\int \frac{1}{2 + 3 \sin x} dx$

(d) $\int \frac{1}{2 \cos^2 x + 3 \sin^2 x} dx$

(e) $\int_{-1}^{3/2} |x \sin(\pi x)| dx$

(f) $\int_{-1}^{2} |x^3 - x| dx$

(g) $\int \frac{x^3}{\sqrt{1 - x^8}} dx$

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