

AI1110 Assignment 2

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I. QUESTION 1 (VII)

Question:

Evaluate:

$$\int \frac{\sec^2 x}{\csc^2 x} dx \quad (1)$$

Solution:

$$\int \frac{\sec^2 x}{\csc^2 x} dx = \int \frac{\frac{1}{\cos^2 x}}{\frac{1}{\sin^2 x}} dx \quad (2)$$

$$= \int \frac{\sin^2 x}{\cos^2 x} dx \quad (3)$$

$$= \int \tan^2 x dx \quad (4)$$

$$= \int \sec^2 x - 1 dx \quad (5)$$

$$= \tan x - x + C \text{ (where C is constant of integration)}$$

(6)