



مدونة المناهج السعودية

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الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

*Second Semester 1436/1437 H- 1<sup>st</sup> Exam*

*Course Number and Symbol: 200 Math*

*Course Title: Integration Basics.*

*Duration of the Test: 60 minutes*



**KINGDOM OF SAUDI ARABIA**

**University of Tabuk**

**Faculty of Science**

**Department of Mathematics**

Name : .....

I. D. : .....

Dr. ....

Question	degree	signature
1	/ 8	
2	/ 9	
3	/ 8	
Total	/ 25	

**Question 1 :** Find the following

i)  $\int \frac{x^2}{x^2 + 4} dx =$

ii)  $\int \tan^3 5x \cdot \sec^2 5x dx =$

iii) The arc length of the curve  $y = x^{2/3}$  from  $x = 1$  to  $x = 8$ .

$$[\text{Hinte: Arc length} = L = \int_c^d \sqrt{1 + \left(\frac{dx}{dy}\right)^2} dy]$$

**Question 2** : Evaluate the following

$$i) \frac{d}{dx} \int_1^x \frac{\cos t^2}{t} dt =$$

$$ii) \int_{\pi^2}^{4\pi^2} \frac{\sin \sqrt{x}}{\sqrt{x}} dx =$$

iii) *Sketch the region bounded by the following curves  $y = x^2$  and  $y - x = 2$ , and find its area.*

**Question 3 :**

i) If  $f(x) = \begin{cases} 3x^2 - 2 & \text{if } x < 3 \\ \frac{1}{x-2} & \text{if } x \geq 3 \end{cases}$ , find the integral  $\int_0^4 f(x) dx$

ii)  $\int x^2 \sqrt{x-1} dx =$

iii) Find the volume of the solid that results when the shaded region is revolved about  $y$  - axis.

