

Bandra West | Vile Parle West

H. O.: Shop No. 5, Hill Crest Society, 16th Road, Bandra (W),

Mum: 50. Ph: 26051635

Branch: Avon Arcade, Shop No. A/121, 1st Fl., Vile Parle (W),

Mumbai: 56. Ph: 26189748 / 9820418533

S.Y.I.C (2019-20)

MATHS PAPER - I

12/12/19 **Thursday** Time:- 1 1/2 hrs.

Marks: 40

Unit Test 1

Topic: Derivative; Integration & Definite Integration & **Continuity**

08.00 am to 09.30 am

0.1. Attempt All Questions:-

(8)

Find the value of k if the function

$$f(x) = \frac{\tan 7x}{2x}, \quad \text{for } x \neq 0$$

$$= k \quad , \quad \text{for } x = 0$$
is continuous at $x = 0$

(ii) Evaluate:
$$\int x \cos x \, dx$$
.

(iv) Find
$$\frac{dy}{dx}$$
 if $y = \cos^{-1}(\sqrt{x})$

(iii) Evaluate:
$$\int \frac{1}{x(3 + \log x)} dx$$

Q.2. Attempt All Question:-

(i) Find
$$\frac{dy}{dx}$$
 if $y = \tan^{-1}\left(\frac{6x}{1-5x^2}\right)$ (ii) Find $\frac{dy}{dx}$ if $x = e^{2t}$, $y = e^{\sqrt{t}}$

(iii) Find
$$\frac{dy}{dx}$$
 if $x = e^{2t}$, $y = e^{\sqrt{t}}$

Examine the continuity of the following function:

$$f(x) = x^2 - x + 9$$
, for $x \le 3$
= $4x + 3$, for $x > 3$ } at $x = 3$

(\lor) If 'f' is continuous at x = 0, then find f(0).

$$f(x) = \frac{15^x - 3^x - 5^x + 1}{x \tan x}, \quad x \neq 0$$

Q.3. Attempt All Question:-

3. Attempt All Question:-

Q-3.

(i) Evaluate:
$$\int \frac{(1+\log x)}{x(2+\log x)(3+\log x)} dx$$
(ii)
$$\int_{0}^{\pi/2} \frac{dx}{1+\cot x}$$
(20)

Discuss the continuity of the function f at x = 0, (iii)

where
$$f(x) = \frac{5^{x} + 5^{-x} - 2}{\cos 2x - \cos 6x}$$
, for $x \neq 0$

$$=\frac{1}{8}(\log 5)^2$$
, for $x=0$

(1V) If
$$x^y = e^{\chi - y}$$
 Show $\frac{dy}{d\chi} = \frac{\log \chi}{(1 + \log \chi)^2}$

$$(V) \int_{0}^{3} \frac{dx}{x + \sqrt{q - x^{2}}}$$



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Time:- 1 ½ hrs.

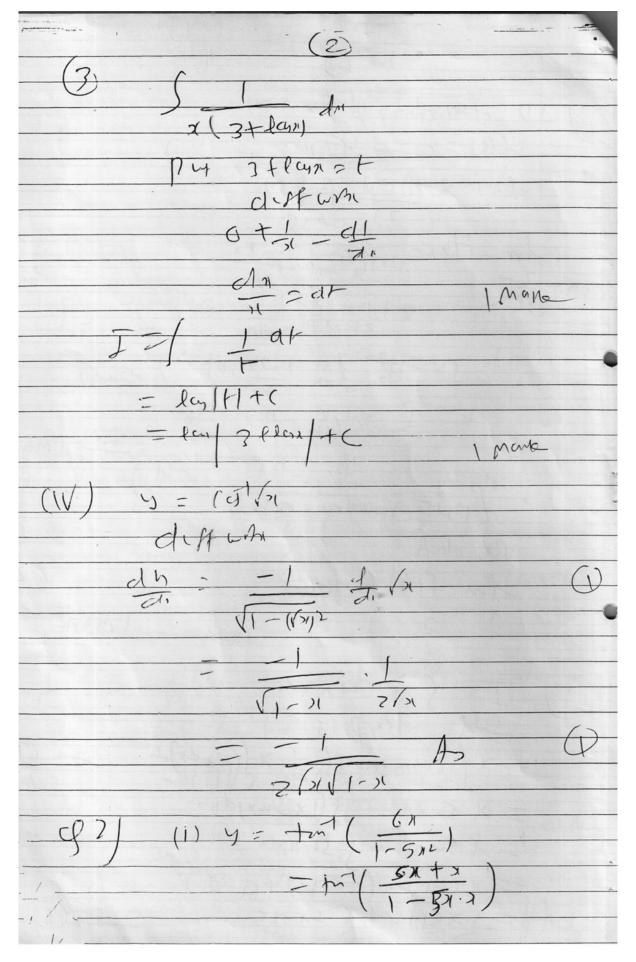
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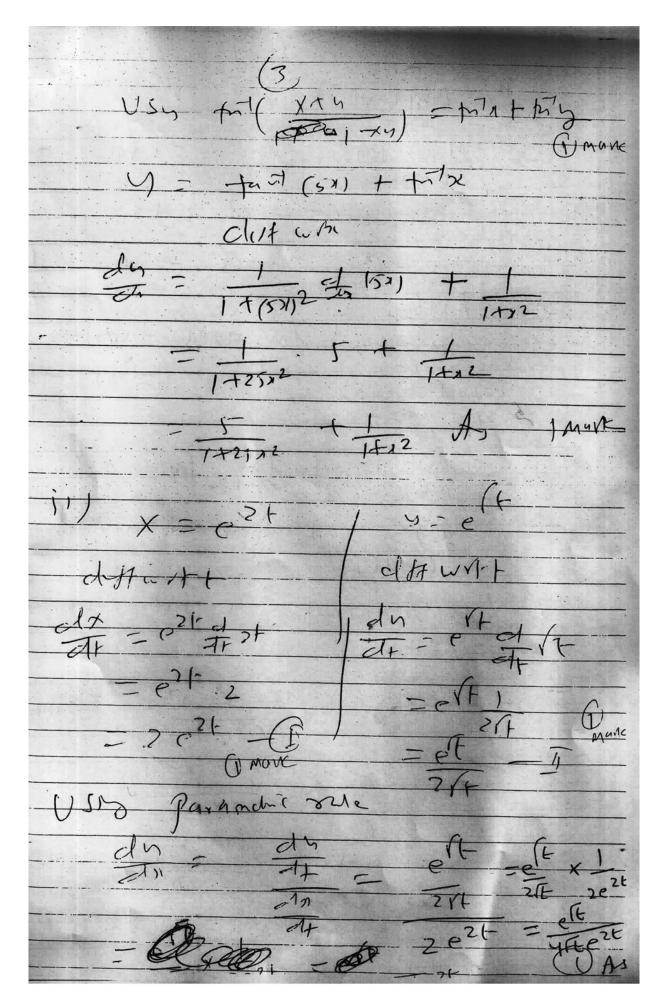
Unit Test 1

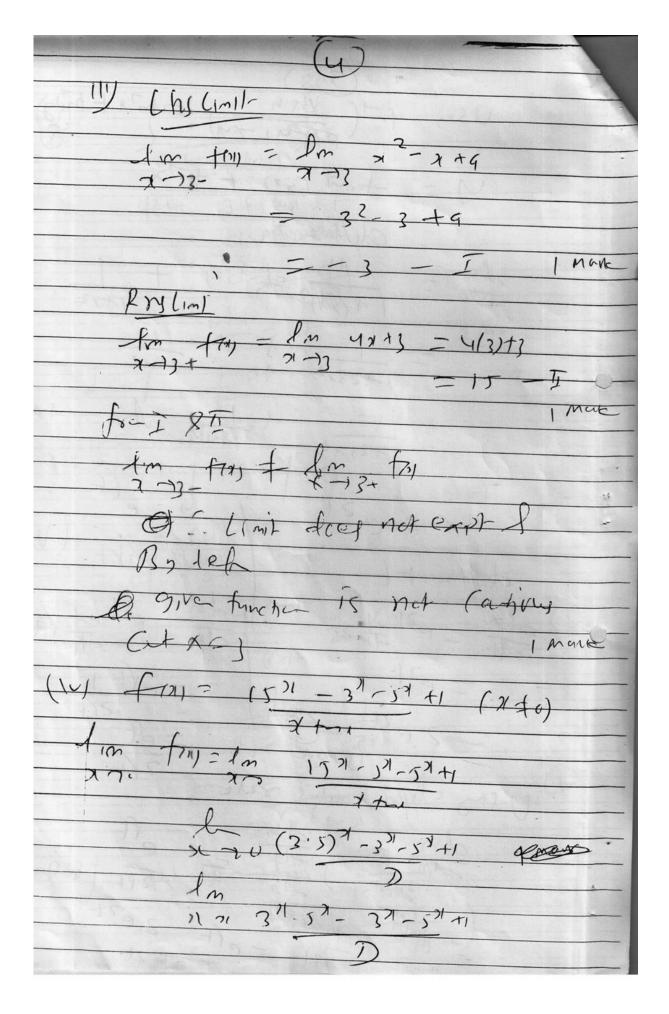
Topic: Derivative; Integration & Definite Integration & Continuity

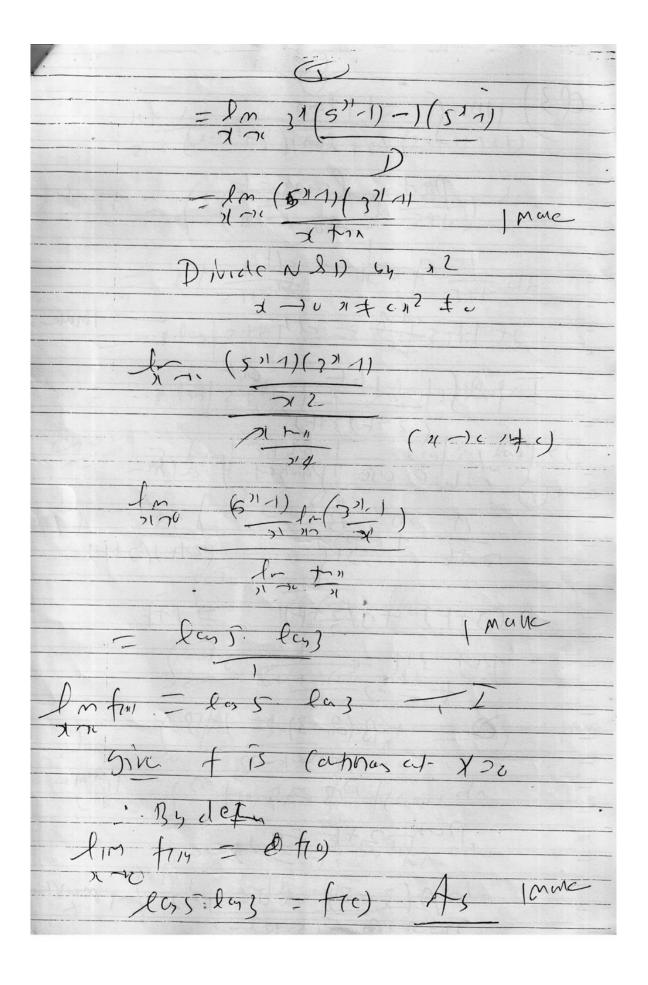
Solution

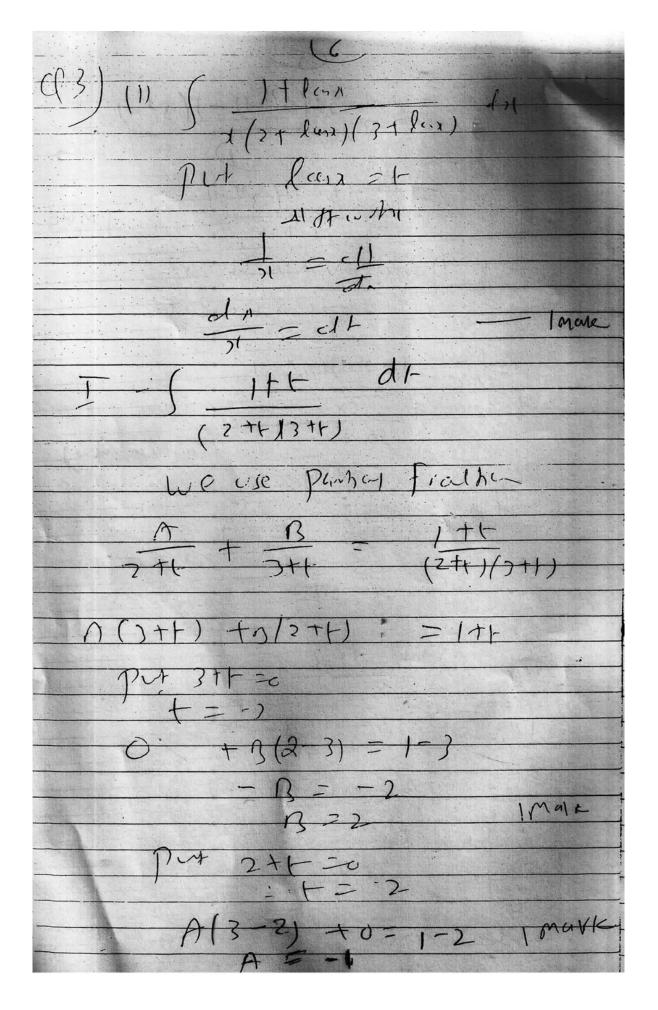
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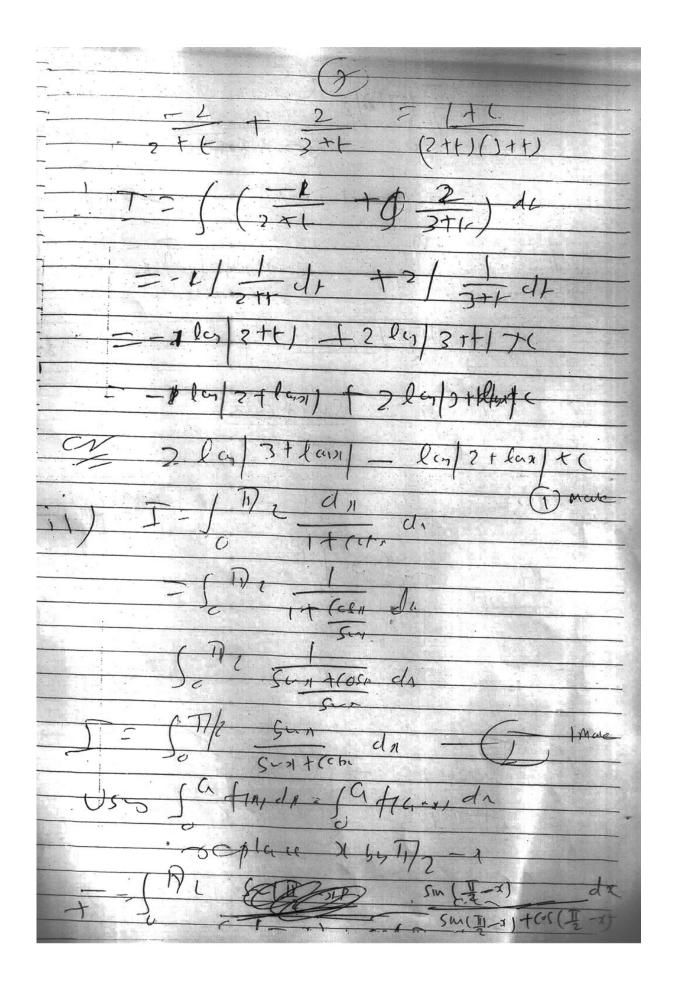


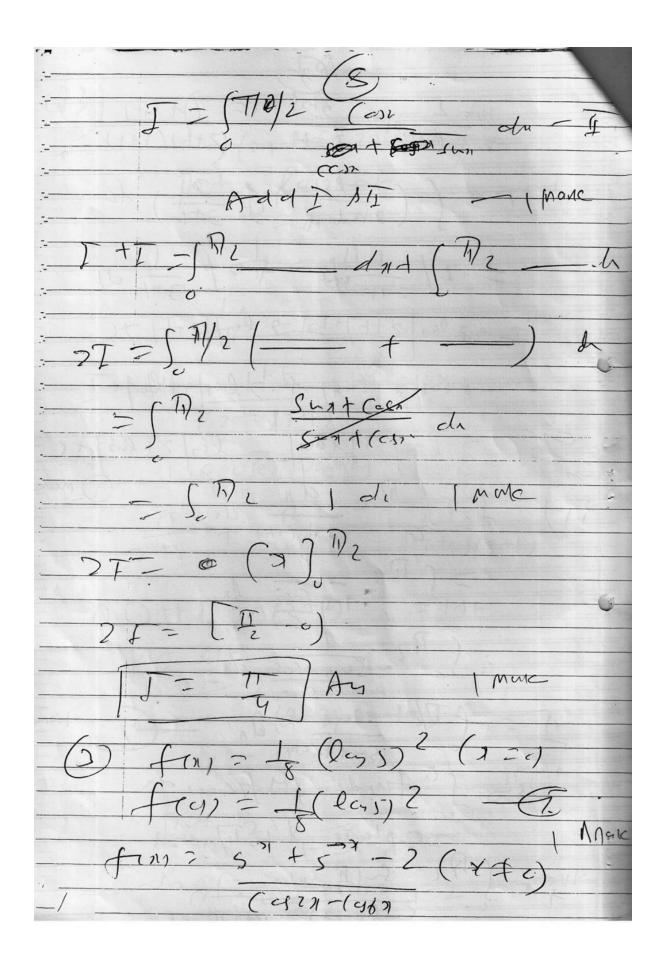


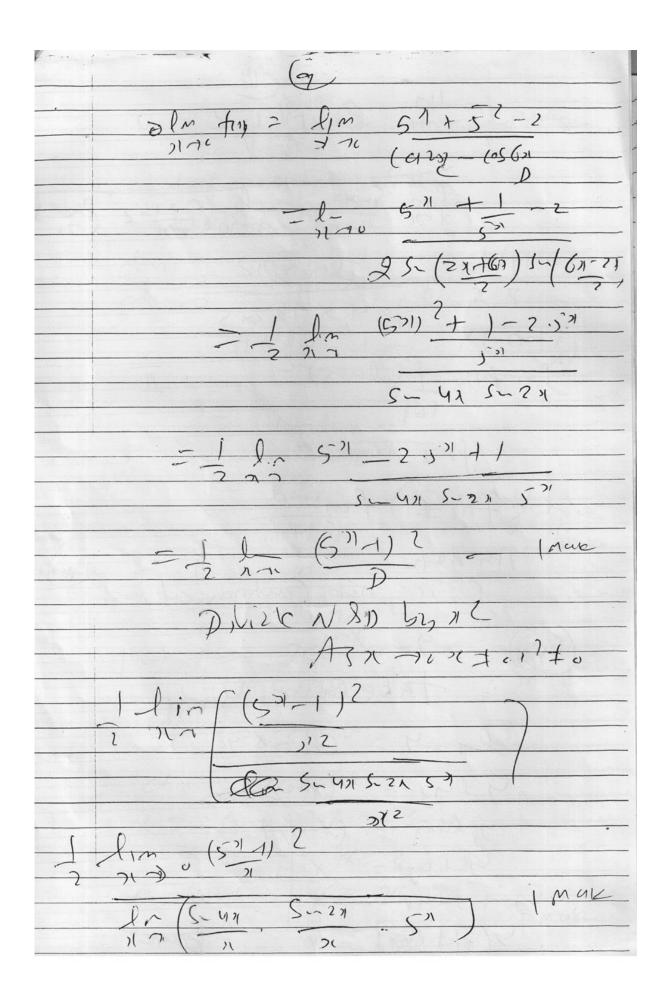


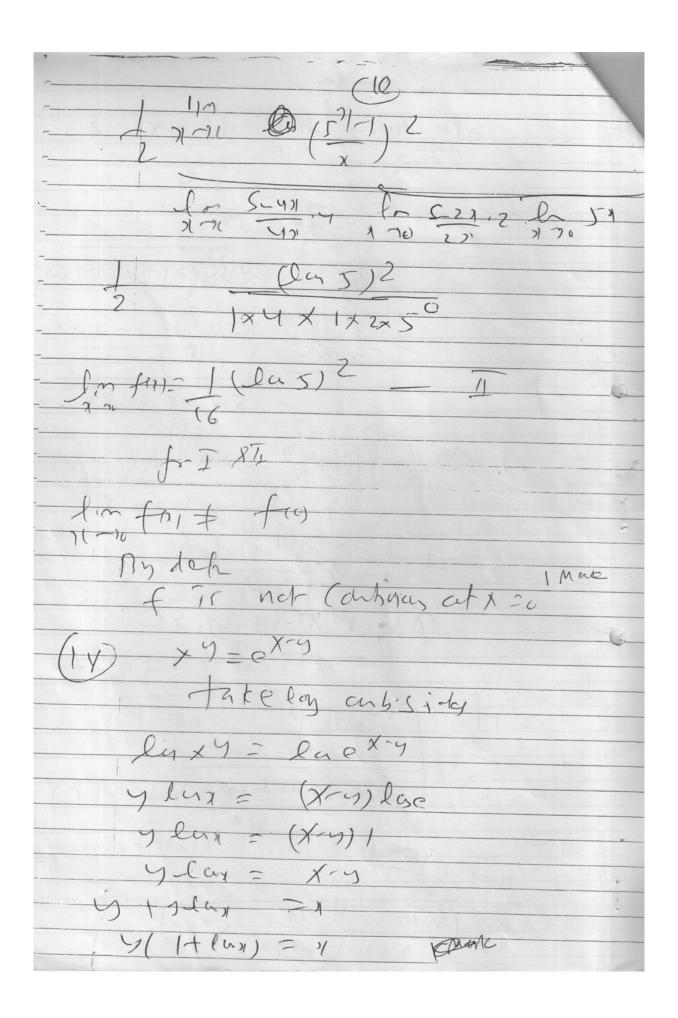












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