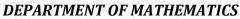


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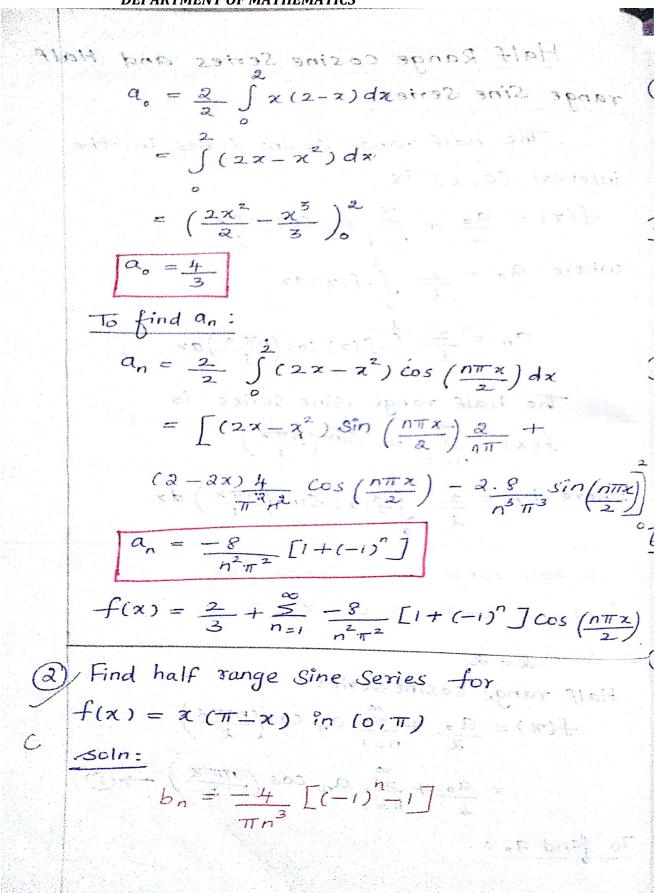


Half Range Cosine Series and Half range Sine Series The half range cosine series in the interval (0,1) is $f(x) = \frac{a_0}{2} + \frac{s_0}{2} a_n \cos \frac{n\pi x}{2}$ where $a_0 = \frac{2}{l} \int f(x) dx$ $a_n = \frac{2}{l} \int f(x) \cos\left(\frac{n\pi x}{l}\right) dx$ The half range Sine Series is $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{\ell}\right)$ where $b_n = \frac{2}{p} \int f(x) \sin\left(\frac{n\pi x}{2}\right) dx$ D) Find half range cosine Series for $f(x) = x(a - x) in \quad 0 \le x \le 2 = (x)^{2}$ soln: l=2 Half range cosine series spor flad buil (2) $f(\pi) = \frac{a_0}{2} + \frac{s}{n-1} a_n \cos\left(\frac{n\pi x}{k}\right) = \infty$ $= \frac{a_0}{a} + \frac{z}{n=1} a_n \cos\left(\frac{n\pi x}{2}\right) \longrightarrow (1)$ To find a. :



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FOURIER SERIES



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(3) Find half trange Casine series for
$$f(x) = 1 - x$$

in $(0, 1)$. The LANN $2MR = 1$
is $(0, 1)$. The LANN $2MR = 1$
is $(0, 1)$. The LANN $2MR = 1$
is $a_0 = 1$, $a_n = \frac{24}{n^2 \pi^2} \left[1 - (-1)^n \right]$
(4) Find half range Cosine series for $f(x) = x \sin x$
in $(0, \pi)$.
Sola:
 $a_0 = 2$, $a_n = \frac{-2(-1)^n}{n^2 - 1}$, $a_1 = \frac{-1}{4}$.
(5) Find half range Fourier Sine Series for
 $f(x) = \int x$, $0 \le x \le \frac{1}{2}$
 $(-1)^n = \frac{4}{n^2 \pi^2} Sin(\frac{n\pi}{2})$
 $b_n = \frac{4}{n^2 \pi^2} Sin(\frac{n\pi}{2})$
(6) Find half range Sine Series for $f(x) = 1 - x$ in
 $(0, 1)$.
Sola: $b_n = \frac{-2}{n\pi}$
(7) Find the half range Sine Series for $f(x) = x$ in
 $0 \le x < 1$ and
Sola: $b_n = \frac{-2}{n\pi}$





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Root MEAN SQUARE VALUE
IRMS VALUE]
The root mean soluare value or RMS
Value of f(x) over the interval (a,b)
is defined as

$$MS = \int \frac{d}{dt} (f(x))^{2} dx$$
(To c) a
(To