



(An Autonomous Institution) Coimbatore-641035.

UNIT-II ORDINARY DIFFERENTIAL EQUATIONS	Method of variation of parameters
2]. Solve $\frac{d^2y}{dx^2} + y = esc x$	using method of
Vallation of parameters. Soln.	
Garen (D+1) y= CSC >c.	
$\frac{AE}{m^2 = -1}$	
no =±i	
CF = C1 COS X+ C2 STAX	
Here fr= cocx fg=S	SPn >C
$f_1 = -S^{q} n \times f_2 =$	× 20)
Now $f_1 f_2 - f_1' f_2 = \omega$	- 55
Now $f_1 f_2 = f_1 f_2 = \omega$ $\omega = \cos x (\cos x) + SPD.$	x SPn x
$= \cos^2 x + \sin^2 x$	
$\omega = 1$	
$PI = Pf_i + Q f_2$	
$P = -\int \frac{f_2 x}{\omega} dx$	
=- SPAZ CSCZ dz	the set of the set of the set
=- S Sinxx - dx	
$= -\int dx$	
$P = - \varkappa$	a with the with the with
$\mathbf{G} = \int \frac{\mathbf{f}_{1} \mathbf{x}}{\omega} d\mathbf{x}$	
- Casze escx dre	and the second second
$= \int \cos \alpha x \frac{1}{\operatorname{Sq}_{p} x} dx = \int \cot x dx$	
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UNIT-II ORDINARY DIFFERENTIAL EQUATIONS Method of variation of parameters : PI = - x (cos x) + log (Sinx) 89n x The general soin. Ps, y = CF + PI= CICOS x+ Co SPN 2 - 2 COS x+ SPN x log (SPn Z) 3]. Solve $\frac{d^2y}{dx^2} + y = (ot x using method of ramation of Parameters.$ Soln. Given $p = (p^2 + r)y = \cot x$ $m^2 + t = 0$ $m^2 = -1$ $m = \pm i$ AE Cf = C, COS × + C2 SPN × Here $f_1 = \cos \varkappa | f_2 = SPh \varkappa$ $f_1' = -SPh \varkappa | f_2' = \cos \varkappa$ Now, $w = f_1 f_2' - f_1' f_2$ = 1 $PI = Pf_1 + qf_2$ Here $P = -\int \frac{f_2 x}{w} dx$ $= -\int \frac{\sin x \text{ fot } x}{1} dx$ =- Sina cosa da = - Scos x dx P =- SPD 20 and $R = \int \frac{f_1 x}{\omega} dx = \int \frac{\cos x \cot x}{1} dx$ $x = \frac{x 200}{x} + 200 =$ Scanned with CamScanne





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UNIT-II ORDINARY DIFFERENTIAL EQUATIONS

Method of variation of parameters

$$= \int \frac{\cos^{6} x}{3\pi n \times} dx$$

$$= \int \frac{1 - S^{2}n^{2} x}{S^{2}n \times} dx$$

$$= \int [Sc - S^{2}n \times dx]$$

$$= \int [Sc - S^{2}n \times dx] = \int (Sc - S^{2}n \times dx]$$

$$= \int c - S^{2}n \times co - \int S^{2}n \times dx$$

$$A = -\log [Cs - x + \log q (cs - x + co + x) + \cos x]$$

$$\Rightarrow C - PT = -S^{2}n \times co - x + \log q (cs - x + co + x) + \cos x]$$

$$\Rightarrow C - PT = -S^{2}n \times co - x + \log q (cs - x + co + x) + \cos x]$$

$$\Rightarrow C - PT = -S^{2}n \times co - x + \log q (cs - x + co + x) + \log x]$$

$$\Rightarrow C - R^{2}n \times co - x + \log (cs - x + co + x) + \log x]$$

$$\Rightarrow C - R^{2}n \times co - x + \log (cs - x + co + x) + 2 + \log q (cs - x + co + x) + 2 + \log q)$$

$$\Rightarrow C - R^{2}n \times co - x + \log S^{2}n \times co - x + \log (cs - x + co + x) + 2 + \log q)$$

$$\Rightarrow C - R^{2}n \times co - x + \log S^{2}n \times s + \log S^{2}n \times$$





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UNIT-II ORDINARY DIFFERENTIAL EQUATIONS

Method of variation of parameters

PI =
$$Pf_1 + \theta f_2$$
.
 $P = -\int \frac{f_2 \times}{\omega} dx$
 $= -\int \frac{g(n + x) g(2 + x)}{a} dx = -\frac{1}{a} \int tap ax dx$
 $= -\frac{1}{a} \int g(2 + ax) \int tap ax = teg(2 + ax)$
 $P = \frac{1}{a^2} \log(2 + ax)$
 $P = \frac{1}{a^2} \log(2 + ax)$
 $\theta = \int \frac{f_1 \times}{a^2} dx$
 $= \int \frac{\cos a \times g(2 + ax)}{a} dx$
 $= \frac{1}{a} \int \cos ax \frac{1}{\cos ax} dx$
 $= \frac{1}{a} \int dx$
 $\theta = \frac{x}{a}$
 $PI = -\frac{1}{a^2} \log(3 + ax) \cos ax + \frac{x}{a} SPD ax$
The general Solp. 78,
 $y = cf + PI$
 $= c_1 \cos ax + \frac{1}{a^2} \log(3 + ax) \cos ax + \frac{1}{a^2} \sin ax.$