

:.
$$M = -3 \pm \sqrt{3}i$$

$$y(t) = e^{-3t} \left[c_1 \cos \sqrt{2}t + c_2 \sin \sqrt{3}t \right]$$

$$y(0) = c_1 \qquad \therefore \quad c_4 = 0.4$$

$$y''(t) = e^{-3t} \left[-\sqrt{2} c_1 \sin \sqrt{3}t + \sqrt{2} c_2 \cos \sqrt{3}t \right] - c_2 \cos \sqrt{2}t + c_2 \sin \sqrt{2}t + c_3 \sin \sqrt{3}t \right]$$

$$0 = \sqrt{3} c_1 - 2c_1$$

$$c_2 \cdot \sqrt{3} \times 0.4 = 0$$

$$\begin{bmatrix} x_i \\ x_i \end{bmatrix} = \begin{bmatrix} z & z \\ z & z \end{bmatrix} \begin{bmatrix} x_i \\ x_i \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$V = V = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 2 & 1 \end{bmatrix} = 0$$

$$\begin{bmatrix} -1 & 3 \end{bmatrix} \begin{bmatrix} \pi_1 \\ 0 \end{bmatrix} = 0$$

$$94 - 3n_{1} = 0$$

$$91 - 2n_{1} = 0$$

$$1 = 3n_{1}$$

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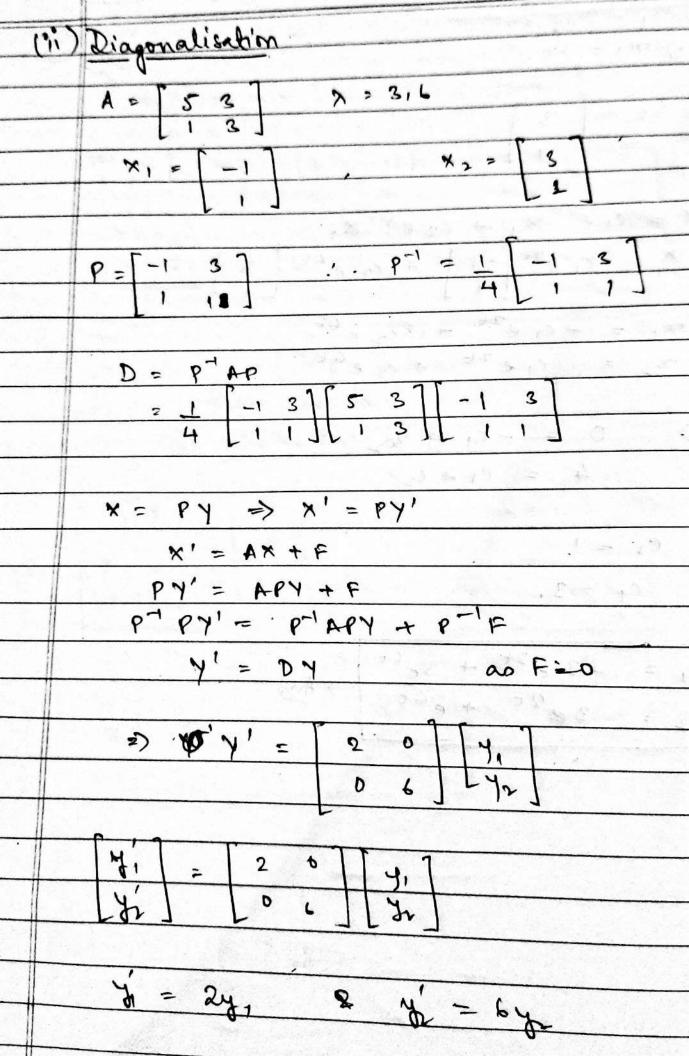
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$$\frac{dy}{dt} = \frac{3y}{dt}$$

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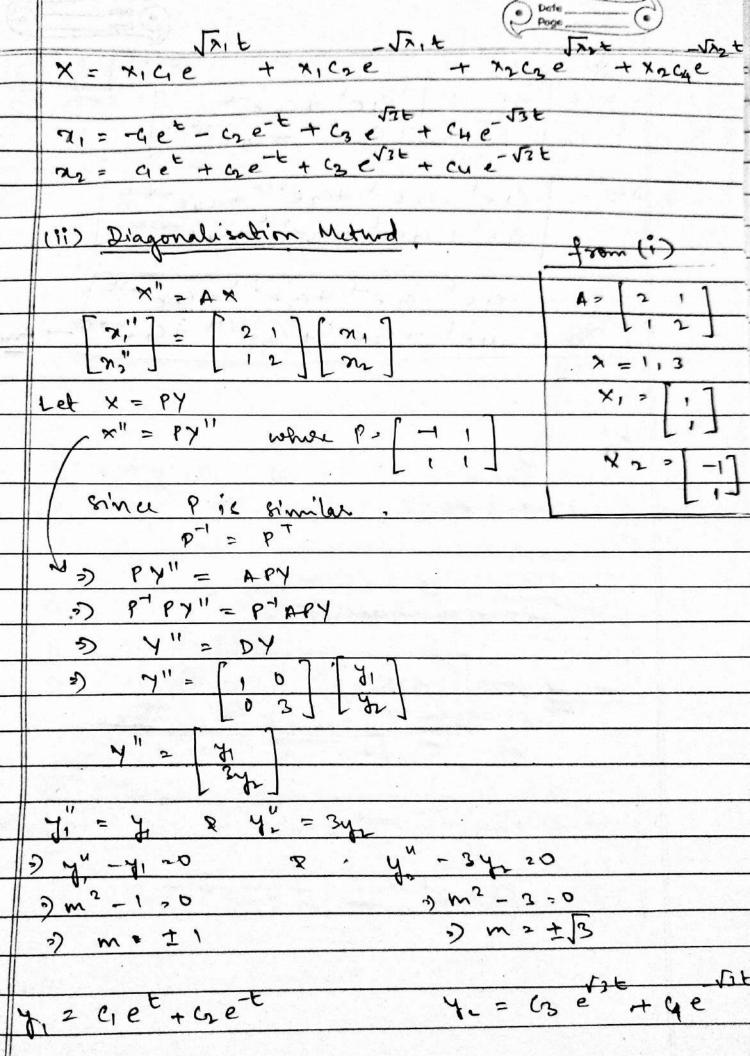
$$\frac{dy}{dt} = \frac{3y}{3t}$$

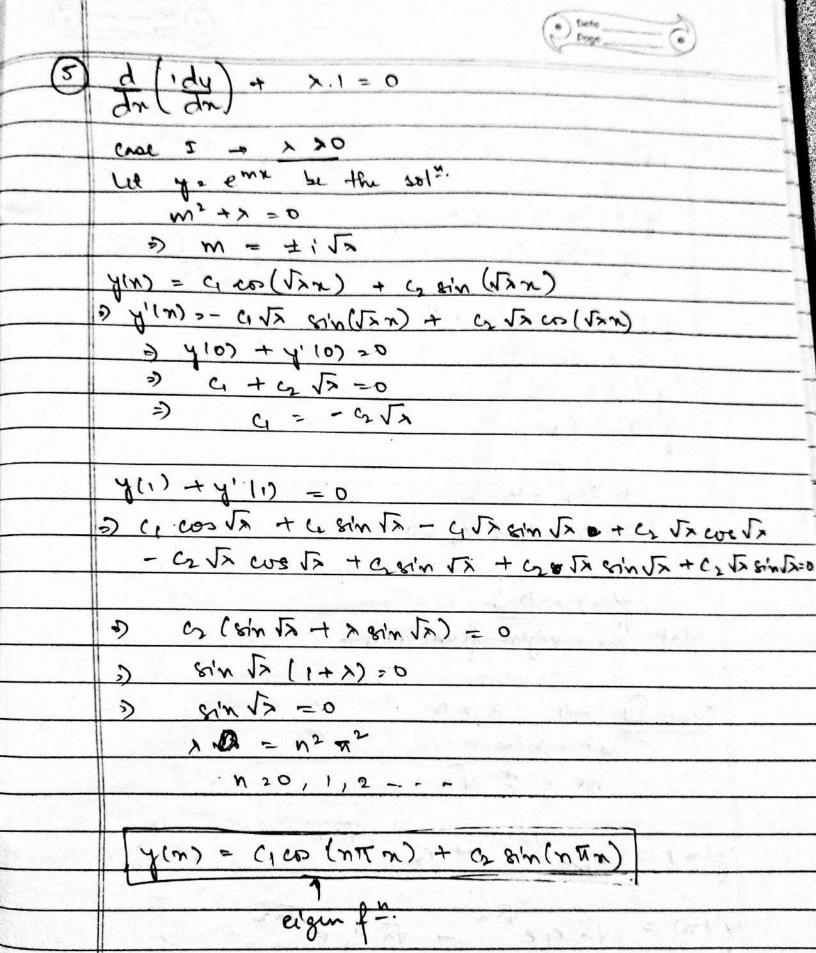
$$\frac{dy}{3t} = \frac{3y}{3t}$$

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$$\frac{dy$$

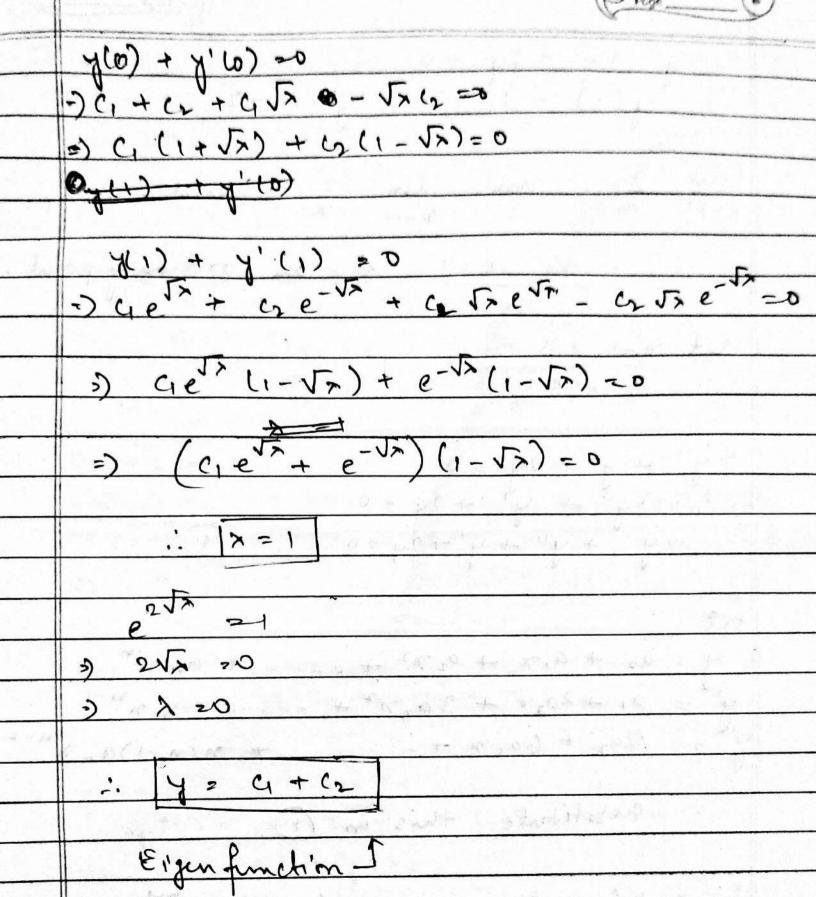




Case II -> x >0.

M" >0

M2 >0' , M20 y(n) = (1 + 62 x y1(x) = c2 y(1) = 4+12 20 y10) = 4 = -lx y'(1) = c2 y'(0) 2 (2 G+2c220 60-00 (1 = 6, 20) i. yen) = 0. Not an eigen function. the principal and principal at Cape III -9 x = 0 . m2-x=0 m = ± √x y(m) = Ge Van + Ge tam y'(n) = 12 ee - 15 cre-122



wh, +h, + 5h 20 Win 1 and lim 2 exist. in n = 1 is an ordinary point. Ut n-1 , N 2 - 91+1 ry" - y' + 2y = 0 3 (x+1) y" + y" + 2y 20 D 24" + 4" + 41 + 24 20 y = ao + a, x + a2 x2 + ... + an x" y'= a, +2an + 3a2n2 + --- nann y" = 2a2 + 6a3 9x + - - + n(n-1)a 2 x n-2 substitute this in 1 2a2n+6a2n2+ --- + n(n-1)annn-1+ n(n+1) an m" - laz + 6 azn + --- + (2rn)(n+1)ans) + a, + 20, x + --- + (x+1)an+1x" + 200 + 20, 1 + 20, 22 + - - + 20m 2 m = 10



co- of de no dag + a, + da, = 0 ·) 2a2 2 -a, - 2a. s) a2 = - a1 - 200 co. eff of n 2a2 + 6a3 + 2a2 + 2a, = 0 $9 \quad 3a_2 = -2a_2 - a_1$ a3 2 - 2a2 - a1 co-off of xx n(n+1) an+1 + (n+1)(n+2)0n+2 + (n+1)an+1 + 20n =0 => (n+1) (n+2) an+2 + (n2+2n+1) an+1 + day =0 an+2 = -2an - (n2+2n+1) an+1 (n+1) (n+2) Put n 20 $-a_1 - 2a_0$ y(n) = ao + a, n + a, n + . - - + ann y (n) = y(1) = 1 4(2-1) = 4(2) y(n) = a0 + a, (n-1) + a2 (n-1)2 + +an (n-1)n

9 y(1)= a0=1

$$y'(n) = a_1 + 12a_1(n-1)^2 + - na_1(n-1)^n$$

$$y(1) = a_1$$

$$1 = a_1$$

$$1 = a_1$$

$$a_1 = 2$$

$$a_2 = -a_1 - 2a_0 = -2$$

$$a_3 = -2a_1 - 2a_1 = 2$$

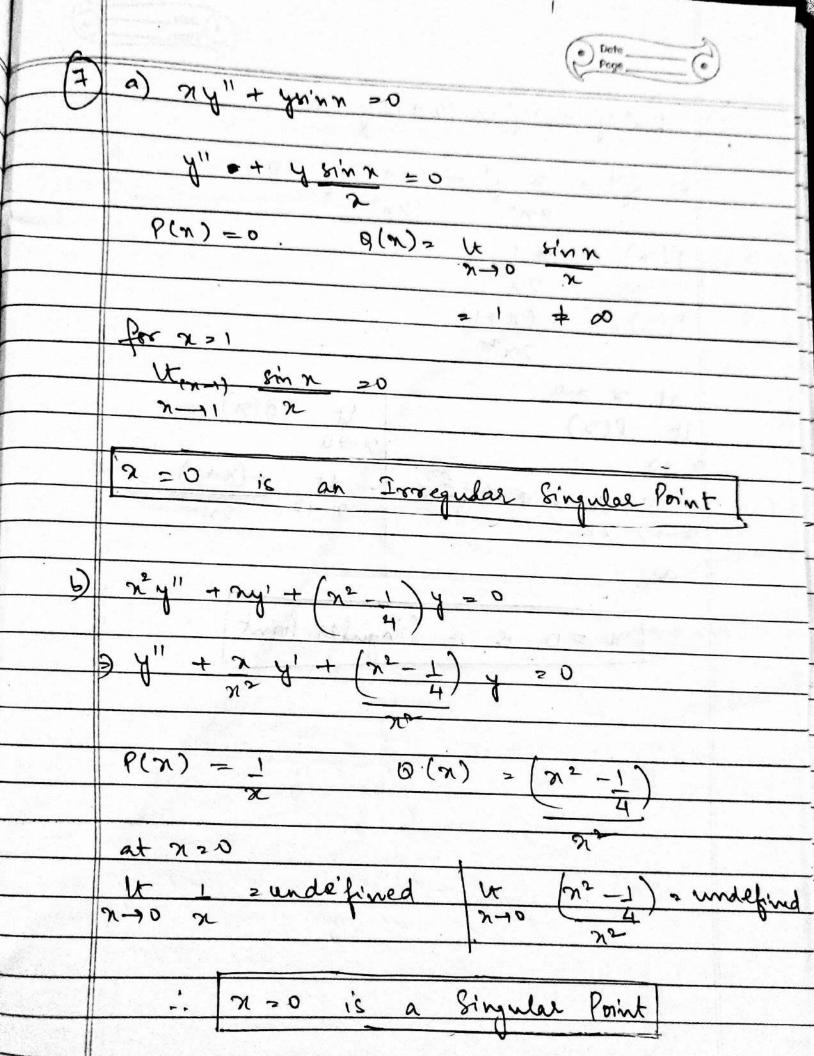
$$3$$

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$$y(n) = 1 + 2(n-1) - 2(n-1)^2 + 2(n-1)^2 + ...$$

Ans

Constitution of the contract o



1)
$$2n^{2}y'' + 2ny' - (n+1)y^{20}$$

5) $y'' + ny' - (n+1)y^{20}$
 $2n^{2}$
 $2n^{2}$
 $2n^{2}$
 $3n^{2}$
 $3n^{2}$
 $3n^{2}$
 $3n^{2}$

At $n = n$

It $p(n)$
 $3n = 0$

It $p(n)$
 $3n = 0$
 $3n$