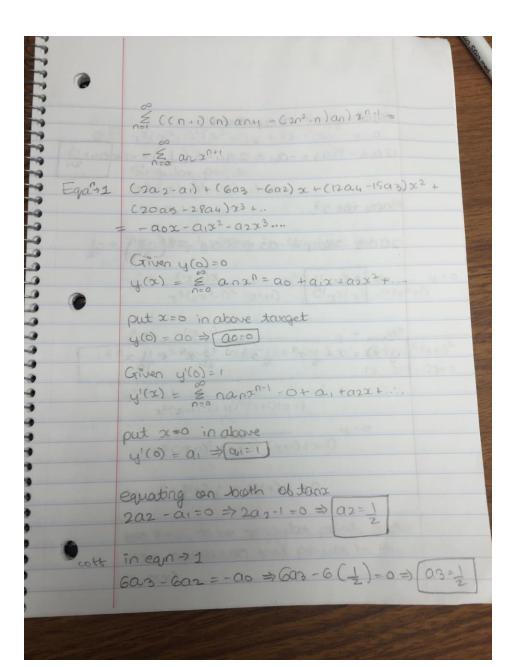
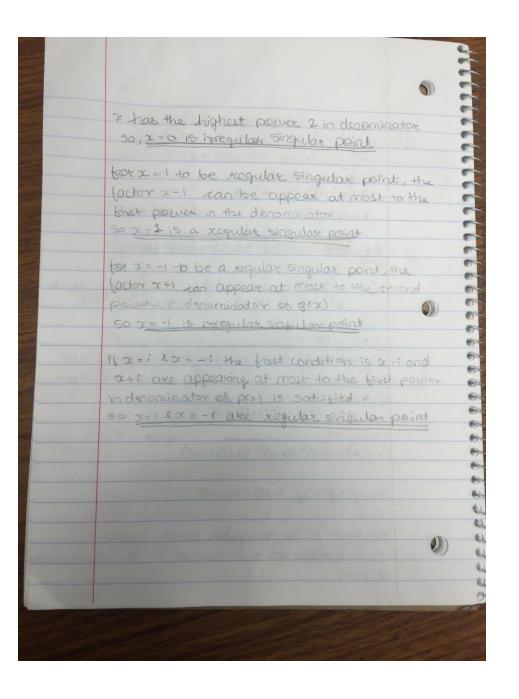


Given: (1-2x)y''-y'+xy=0, y(0)=y'(0)=1Let $y=\sum_{n=0}^{\infty}a_ns^n$ be the galution of the eq. Then y'= & nanxn-1 and yn = En(n-1)anxn-2 Sub y,y',y''..... (1-2x) $\frac{2}{5}$ $n(n-1)anx^{n-2} - \frac{2}{5}$ $nanx^{n-1} + x = \frac{2}{5}$ anx^{n-2} Ench-Danxh-2 -2 & nch-Danxh-2+1 - Enanxh-1+ & anxh+1 =0 $\sum_{n=2}^{\infty} n(n-1)a_n x^{n-2} - \sum_{n=1}^{\infty} [2n(n-1)+n]a_n x^{n-1} + \sum_{n=0}^{\infty} a_n x^{n+1} = \sum_{n=0}^{\infty} a_n x^{n+1} =$ E n(n-1)an21-2 - E [2n2-n]an21-1 + E anxing Replace 1 by 1+1 in the first summation E (n+1) (n+1-1) an+1xn+1-2 - E [2n2-n]an xn+1+ & an xn+1 =0 £ (n+1) (n)an+1xn-1 - £ [2n2-n]anxn-1= - E anz n+1

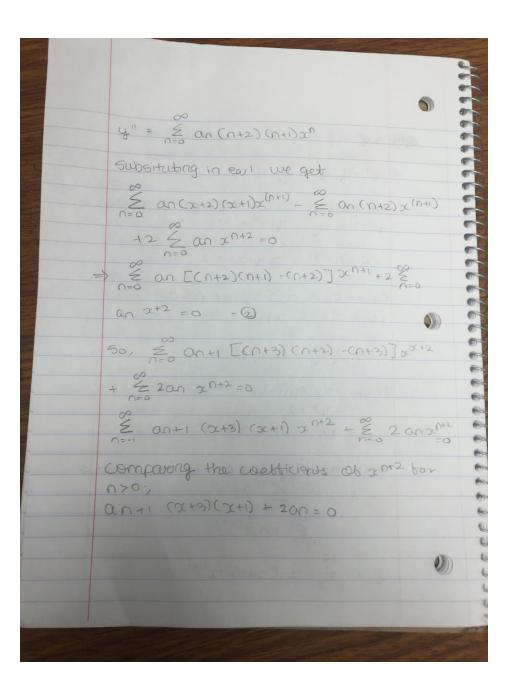


equating 22 in equations $|2a_4 - 15a_3 = -a_1 \Rightarrow |2a_4 - 15(\frac{1}{2}) = -1 \Rightarrow |a_4 = \frac{13}{24}$ Same for x3, 2005-2804 = -02 = 2005-28 (13) ⇒ a5 = 11

33 x3(x2-1)2(x2+1)4"+(x-1)x4"+4=0 Singular points: x3 (x2-1)2 (x2+1)=0 3=0,1,-1,:,-1 By using twitting in standard form $\lambda_{3}(x_{5}-1)_{5}(x_{5}+1)$ $\lambda_{3}(x_{5}-1)_{5}(x_{5}+1)$ λ_{1} y'' + (x-1) $x^2(x-1)^2(x+1)^2(x+1)(x-1)$ y' + 1 $x^3(x-1)^2(x+1)^2$ $y'' + \frac{1}{x^2(x-1)^2(x+1)^2(x+1)(x+1)}$ x3(x-1)2(x+1)2(x+i)(x-i) 50, y"+ P(x)y' + (3(x)y = 0. tran x = 0 to be reggular point, bactor x can appear on that power in the denomination



7	
2 0	
9	
9	7
84	Jay"-y' +2y=0 - ()
	y"-1xy'+2y=0 0 pod do so
	The state of the s
	-comparing this with $y'' + p(x)y' + g(x)y = 0$ $p(x) = -1, q(x) = 2/x$
	$p(\alpha) = \frac{1}{x}, q(\alpha) = \frac{2}{x}$
	ALE SON XMA SO
	$xp(x) = = 1$, $x_{x}(x) = 0$
	2 CO F(M2)(0+0)-(0+2)]
-	15 a singular point
•	po = dim x p(x) = 1 0 = 5+8 no
	203: 00 2 - 2 0 2 2 - 2 2 - 1 0 - 1
	$q_0 = \lim_{x \to 0} x q(x) = 2$
	Thus, the equation, to me &
	$-\gamma^{2}+2\gamma=0$
Mono 1	=> x,=0 and 82-2 400 8
01	CONT.
	Since, the largest root = 2, the services is
144	The sedes is
	$y_1 = x^2 $ $= $ $= $ $= $ $0 $ $0 $ $0 $ $0 $ $0 $ $0 $ $0 $ 0
	6 (W5)
	= Z on x'
	<i>∞</i>
	$y' = \underbrace{\times}_{n=0}^{\infty} \operatorname{an}(x+2) x^{n+1}$
	U=0



 $\Rightarrow a_{n+1} = -2 \qquad a_n$ $(\alpha + i)(\alpha + 3)$ Then, n=0. Q1=-2 ao $n=1 \quad a_2 = -2 \quad a_1 = (-2)(-2) \quad a_0 = 1 \quad a_0$ = 1 ao n=2 n=-2 n=-2 n=-1x=3; ay = -2 az = -2 x-1 ao = 1 ao 24 36 43250, $y = y_1 = x^2 - 2x^3 + 1x^4 - 1x^5 + 1x^6...$