```
Nonhomogeneous Equations.
 10) 4"+24"+4=X
                Complimentary
                                                                                                              Particular
                                                                                                                                                         -> (4e=AX+B
                y"+2y'+y=0
                                                                                                               £(x) = x ...
             r2+2r+1=0
                                                                                                                (x) =1
            (r+1)2=0
                                                                                                                                  4p"+2yp + 4p= X
            the framework 2 and a second a common
             y=c/extcxxex
                                                                                                                                          Q+2A+AX+B=X
                                                                                                                                                A=1 28+B=0
                                                                                                                                                                                   2+B=0
           Marie mais about a consistency of the constraint of the constraint
                                                                                                                                                                                  [3 = 2
                                                                                                                                                     4p = X-2
16) y"+5y + 6y = 3x2
           Complimentery
                                                                                                                  Particular
                                                                                                                f(x)=3x2
             4+54+64=0
                                                                                                                                                                                 (ye=Ax2+Bx+C)
             r^2 + 5r + 6 = 0
                                                                                                                                                                                  yp=2AX+B
                                                                                                                   21(x)=6x
              (r+3)(r+2)=0
                                                                                                                                                                                 4p = 2A
                                                                                                                   f" (x) = 6
                                                                                                                     yp"+5yp+64p=3x2
             in the second second
           4c= CE 3x + Cz = ZX
                                                                                                                                  2A + 10AX+5B+6AX2+6BX+6C= 3x2
                                                                                                                                 6A=3 10A+6B=0 2A+5B+6C=0
                                                                                                                                 6C = 19
                                                                                                                                                              y_{p} = \frac{1}{2}x^{2} + \frac{5}{6}x + \frac{19}{36}
          4= Cre + Se + x2 - 5x + 19
2 6 36
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le) 4"-74+64==x Complumentary Particular y"- Ty + by = 0 f(x)=ex 4P=13E * 4y=ex yp=Axex) $f'(x) = e^x$ r2-7r+6=0 yp=Aex+Axex (r-6)(r-1)=0 yp"=Bex+Fex+Axex n=6 5=1 y= c,e6x + c,ex yp"=Typ+byp=E 2Aex + Axex - 7Aex - 7Axex + 646xex = ex $-54e^{x} = e^{x}$ y=c,ex+cex-1xex -54=1 M = 5 ypon Son XeX 10) 4=24+Jy=xe2x Complimentant Particular fix = xe2x fr yo= Ae2x + Bxe2x y = 24 + 74 = 0 f'(x)= e2x+2xe2x) ye = 29e2x+Be2x+2Bxe2x +2-2x+1=0 C= 2+1-24 = 1+16 i yp"=4Ae2+2Be2+2Be2+4Bxe2x 40= ex [c,sm(16x)+c,cos(16x)] 4462 + 4Be + 4Bx2 - 2(242 + Be2 + 2Bx2)+7(462 + Bx 44/ex+48ex+48/ex-48/ex-28ex-28ex-48/2x+14ex+18xxxx 2BeX+TAeZX+TBXeZX=XeZX 2B+7A=0 7B=1 U= E/CSIMILEX)+CCOSUTEX/- == e2x+ + xe2x $y_e = \frac{-2}{49}e^{2x} + \frac{1}{1}xe^{2x}$

```
|e||2y'+5y=\sin x
                                       Particular
      24 ± 54 = 0
                                                      2 yp=HSMX+BCOSX
                                        f(x) = Sinx
                                       11(X)= COSX
                                                         ye = Acosx - Bsinx
                                                          yp" = -ASINX-BLOSX
      アニキラニューサウン
                                              24p + Eyp = SIOX
      y_c = c_1 \sin(\frac{\pi o}{2} x) + c_2 \cos(\frac{\pi o}{2} x)
                                             -2Asinx-2Bcosx+5Asinx+6Bcosx=sinx
                                               SASINX + BBCOSX = SINX
                                                 34=1 38=0
      y=c_1\sin\left(\frac{10}{2}x\right)+c_2\cos\left(\frac{10}{2}x\right)+\frac{1}{3}\sin x A=\frac{1}{3} B=0
                                                        Up= $SINX
  19) 3y"-2y+4y=cos(2x)
      Complexentons
                                         Particular
      34-24-49 30
                                         f(x)=cos(2x) /> y,= Asin(2x) +B(os(2x))
                                         f'(x) = -2\sin(2x) y_p' = 2A\cos(2x) - 2B\sin(2x) y_p'' = -4A\sin(2x) - 4B\cos(2x)
      r = 2 \pm \left[ -44 = \frac{1}{3} \pm \frac{111}{3} \right]
      4=e / CAN ( 3x)+GCOS (3x)
                                                 34p - 24p + 44p = cos(2x)
                                             -1219sin(2x)-1218cos(2x)-419cos(2x)+419sin(2x)+419sin(2x)
                                                                               +4B(05/2X)=(092
                                                    (4B-8A)\sin(2x)+(-4A-8B)\cos(2x)=\cos(2x)
                                                      4B-8A=0
                                                                         -44-88=
      M3 (SM3X) + (2(05(5X)) - 50 (2X) - (05/7X)
                                                        96 = 4B
                                                                         - My .... ( 1/2) --- /
                                                        B=2P == 20 A=1
                                                         Bar John SIN(SX) on the COS(SX)
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19) y"+y = sinx
     Camplimentury
                           Bornonde
     y"+4=0
                           fixi=sinx (=> y== Hsinx+BEOSX
                          f'(x) = cosx J
                                      Up = ASINX+AXIOSX+BCOSX - BXSINX
                               Up" = Acosx+Acosx-Axsinx-Bsinx-Bsinx-Bxcosx
     ye = c, sinx+czcosx
                               4" - 4p = SINX
                            2Acosx-Bysinx-2Bsinx-Bxydsx+Axsinx+Bxydsx = sinx
                                     2A-COSX-2BSINX = SINX
     4= C SINX + C (OSX - 2 X COSX
                                       28 = 0 - 25 = 1
                                        H=0 B===
                                          yp X COSX
 10) y"-y=3ex
                            Particular
                            -PLN = 3cx for the thex
    4 - 4 - 0
                            f'(x)=3ex) yp=Axex
                                             ys'=Aex+Axex
     r(12-1)=0
                                              ye"=Aex+Aex+Aex
ye"=Aex+Aex+Aex+Aex
    ha man of he man had been been been been been
    y=q+czex+czex
                               ye" = 4p' = 3ex
                              3hex+Axex- Aex-Axex = 3ex
                                       2Aex = 3ex
   U=C+GE+GE+BXEX
                                        24=3
                                         Q = \frac{3}{2}
                                       Harris ZXeX
```

```
|10||24^{(4)}-84''=2
                             Camplimentany
                                                                                                                                         Particular
                             24" - 84" = 0
                                                                                                                                        f(x)=2
                             2r+-8r2=0
                                                                                                                                          2'(x)=0
                              2r2(r2-4)=0
                                                                                                                                                                                                              ye = 20x
ye" = 20
                              1=1== 0 1= 2 14= 2
                              4= C+ + C2 × + C3 = xx
                                                                                                                                                                                                               JP" == D
                                                                                                                                                              South on Boly me 3
                                                                                                                                                                       0-8(2A)=2
                            y= a+ ax+ ce2+ 4e2 - x2
                                                                                                                                                                                    -164=2
                                                                                                                                                                                                   M = 16 = 8
                                                                                                                                                                                   1 = 8 X5
                  1) 4"-ty" +ty = s.nx + e
                              Cocciolissacatasae
                                                                                                                                                     Particular
                           y'' - 4y'' + 4y = 0
y'' - 4x^2 + 4 = 0
                                                                                                                                                 fix)=sinx+ex (= y=Asinx+Brosx+Cex
                                                                                                                                                                                                                  yp'=Acosx-Bsinx+Cex
                                                                                                                                                 P'(x)=cosx+ex)
                                                                                                                                                                                                                           y_{e}'' = -Asinx - Bcosx + Ce^{x}
y_{e}'' = -Acosx + Bsinx + Ce^{x}
y_{e}'' = Asinx + Bcosx + Ce^{x}
                               ( + 2 - 2 ) 2 = 0 - 1
                            (r-E)2(r+E)2=0
                           Y= CR + CX + C3 + C4X + 
                                                                                                                                                                                                      ye - 4y +4y== sinx+ex
                                                                                                                                                                                 Asinx+Bcosx+Cex+4Asinx+4Bcosx-45ex+4Asinx
                                                                                                                                                                                                                                                                     +4B(03x+4xe=smx+ex
Lu=get + Gxe + GC + GE + Gsmx+ex
                                                                                                                                                                                                       9ASINX+9BLOSX + Cex=SINX +ex
                                                                                                                                                                                                                    94=1 9B=0 C=1
                                                                                                                                                                                                                      A= 9 B=0
Up= 5 SINX + ex
```

```
1 16) 19"-34"+34-4=x3ex
                                                                                                Particular
                    Complimentary
                    y"=34"+34-4=0
                                                                                                      f(x) = x_s e_X
                                                                                                        P'(x) = 2xex +x=ex
                    r3 3r2+3r-1=0
                                                                                                         f''(x) = 2e^{x} + 2xe^{x} + 2xe^{x} + x^{2}e^{x}
                    (r-1)^3=0
                                                                                                                 1 = 1 = 1 = 1 = 1
                                                                                                                   yp = Ax3ex + Bx4ex + Cx3ex
                    ye=c,ex+czxex+czxex
                                                                                                  40=3HX2ex+AX3ex+4BX3ex+BX4ex+5Cx4ex+Cx5ex
                                                                             40 = GAXEX+3Axex+3Axex+Bxex+Bxex+4Bxex+4Bxex
                                                                                                                           +Bx 4ex+2003ex+50x4ex+50x4ex+0x5ex
                                                                                         = 68xex+69x2ex+Ax3ex+128x2ex+88x3ex+Bx4ex+200x3ex
                                                                                                                                                                          +10Cx4ex+Cx5ex
                      4p" = 69ex-108xex+128xex+68xex+68xex+38xex+8xex+248xex+128x2ex+248x2ex+88x3ex
                                                            443x3ex+Bx4ex+60Cx3ex+20Cx3ex+40Cx3ex+10Cx4ex+5Cx4cx
                             = 6Aex+18Axe +96xe +9xe + 248xe +368xe +128xe +128xe +18xe +8xe +18xe +1
                                                                         100x3ex+15cxyex+0xex
                   4-34-40 = X3
                  6/2 (18/14 + 243) Xe + (9/14 + 3/18+ 6/00) X & + (19+128+600) X & + (18+150) X & + (X5e X
              +(3)(6AXEX(6A+12B)X2ex+(A+8B+20C)X3ex+(B+10C)X4ex+CX3ex)
                  +3|3Ax2ex+(A+4B)x3ex+(B+50)x4ex+cx5ex)-(Ax3ex+Bx4ex+cx5ex)=x2ex
                   6Aex + (18/A+24B-18/A)Xex + (2/A+3/B+6/X-13/A-3/B+9/A) x2ex+(18/A+2/B+6/X-3/A-2/B-6/X
                  434+126-10/x3ex+(B+1EC-3B-30X+3B+126-B)x4ex+(C-3C+3C+C)x5ex=x2ex
                  6/Aex+248xex+60cx2ex=x2ex
                    68=0 248=0 60C=1
                                                                                                                  yp= 60 x 50 x
                    9=0 3=0 C= 60
                        Ly=cex+cxex+cxx2ex+tox3ex
```

 $2a|y'' + 6y' + 9y = x^2 - 2x$ y(0) = 0 y'(0) = -1Complinantary 4"+64"+94 =0 4 = Ax2 + Bx + C yp=2Ax+B r2+10r+9=0 (x+3)=0 yp" + byp + 94p = X= 2X r=12=3 ye= ge= + Gaxe 28+6(28x+B)+9(8x2+Bx+C)=x2-2x 2A+12Ax+6B+9Ax2+9Bx+9C=x2-2x 9A = 1 12A + 9B = -2 2A + 10B + 9C = 0 $A = \frac{1}{9} + \frac{1}{3} + 9B = -2$ $\frac{2}{9} + \frac{20}{9} + 9C = 0$ 96= 3 96=2 B = 10 C = 2 $4b = 3 \times_3 - \frac{10}{22} \times - \frac{5}{2}$ 4= CE +CXE + 9x2-10x-3 0=4+03(0)+3(0)-22(0)-3 0=4-3 y= 8 c + c2 x c + 2 x 2 2 x 2 y = 3 + 3 + c2 = 3 + 3 + 2 × - 12 -1 = 2 + C + O + O = 19 U= 3 = 3 × = 1 × = 3 × + 1 × 2 + 10 × = 3

2b)
$$y'' - y' = \sin(2x)$$
 $y(0) = 1$ $y'(0) = 0$
Complimation Boxholder

 $y'' - y' = 0$ $y_p = A\sin(2x) + B\cos(2x)$
 $x^2 - x = 0$ $y_p'' = 2A\cos(2x) - 2B\sin(2x)$
 $x'' = x = 2B\sin(2x) - 2B\sin(2x)$
 $x'' = x = 2B\sin(2x) - 2B\sin(2x) -$

)2c)	y"+3y=cosx	y(0)=1 y'(0)=	6 after 17 - 20 (20 (20 (20 (20 (20 (20 (20 (20 (20	
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- Armen Turk which building the colored was 12 February 1888	y"+3y =0	Up= PISINX + BE		
lman wa linut din washinga din laka kao dhiqadh	C2+3K=0	J. = 1000 X = 2500 X		
	t(r+3)=0	ye = HSINX - BOSX		
	r=0 r=-3	yp"+3yp=0		
	yo= Citae 3x		5X + 314 (05X - 318 S10X = 05X	
		- A-3B=0	A STATE OF THE STA	
and the second s			-B-9B-	
The second secon	The state of the s		- 10B - 10 company of the company of	
			The second secon	
Market and the second and the second	4p====================================			
)	Q			
	4=4+62E3×+3	SINX - TO COSX	1 = -30, e 3x + 3 cosx + 10 sixx	
	LECHEZ+O-TO		1=-36+3+0	
	15=5,+52		. The state of the	
	16 = c1 - 36	e. Heriota i make ja nemi is ekwimanga i si na na ayaya asa	The state of the s	
e e care una secon acomo de la como de la co		at the region of the region of the region of the second of the region of	SEE OFFICIAL SERVICE SERVICE SEE OF SEE OF SEE OF SERVICE SERV	
and the second second second second	4 - 3 - 3 SINX - COSX			
the which will be a state of the whole designed				
in the second of the second				
transmirational arministra i na strato (sec.)	туры түн айнар түрүнүн жүрүнүн айынынын айынын айынын айынын айынын айын ай	ngines - par to consistencially the halocological persons on the second or call the halocological persons a consistency	giras, annas tils skrivlasininga gtilsska transla fatta 17.50, en annatika irisaan sopratisen syds annas siska annas siska kansa	

 $2dy y^{(5)} - y'' = 2 \qquad y(0) = y'(0) = y''(0) = 0 \qquad y'''(0) = y^{(4)}(0) = 1$ Complimentary. Parhular 4(5) - 411 = 0 the second second L5-13-D Harris Hoxes r3(r21)=0 HATT DEX $y_p = Ax^3$ 17=12=15=0 14=1 15=-1 yo= G+GX+GX2+Gxex+csex 46) 4 = 36x2 48" = 6AX D- 69=2 Yp" = 4A. - UA = 2 The second secon yr (4) = 0 yp(5) = 0 4= Ci+C2X+C3X2+(48x+C38x3 y=Cat2Cax+cye-csex-x2 OSCITOLOT CAT Cato 0=G+0+C+-C=-0 OFG+Cy+Co, 0= (2+ C+ - (5 0=0+2-1 0=C=+2+1 (z=-3 (477 678 678 1) y" = Cyex Cge = 2 y"=cye+cse 1 = 252 + Coe + coe - 2x 0=263+64+65-0 1 = 64 = 65 = 2 = 2 = 1 1=C+++C5 0=26+6+65 1=3+2cs C4 = 3+ C5 Die Indag to Zon I C4 = 3-1 -2=26 m to 2 2 5 3 min man some C4 = 20 CS = -1 4=-1-3x-5x2+2exex-5x3