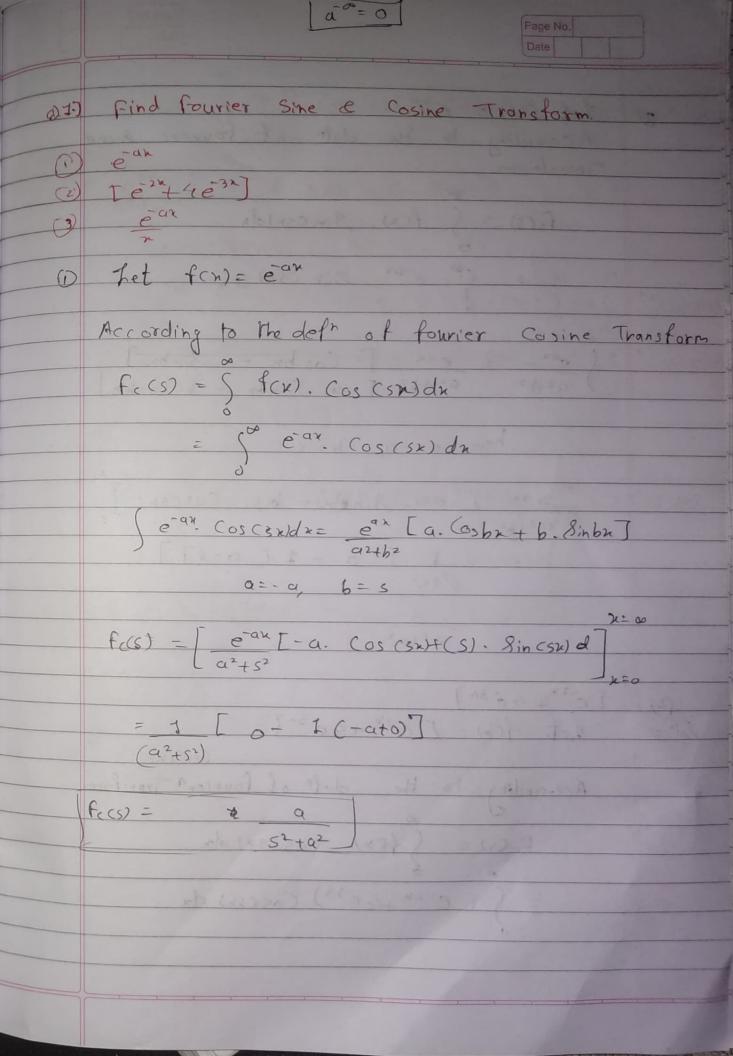
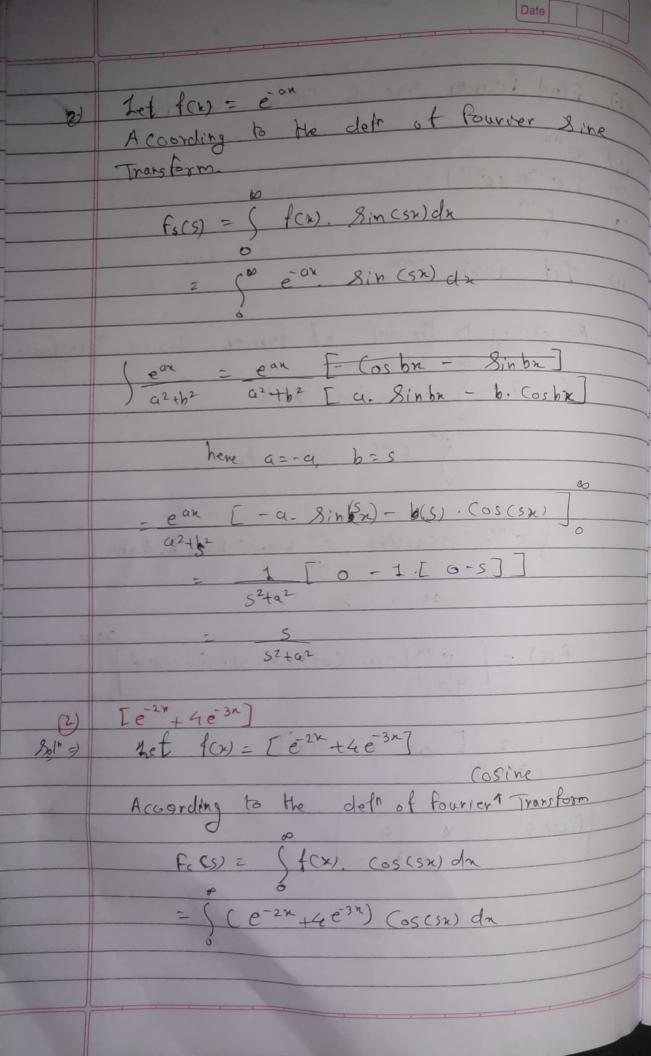
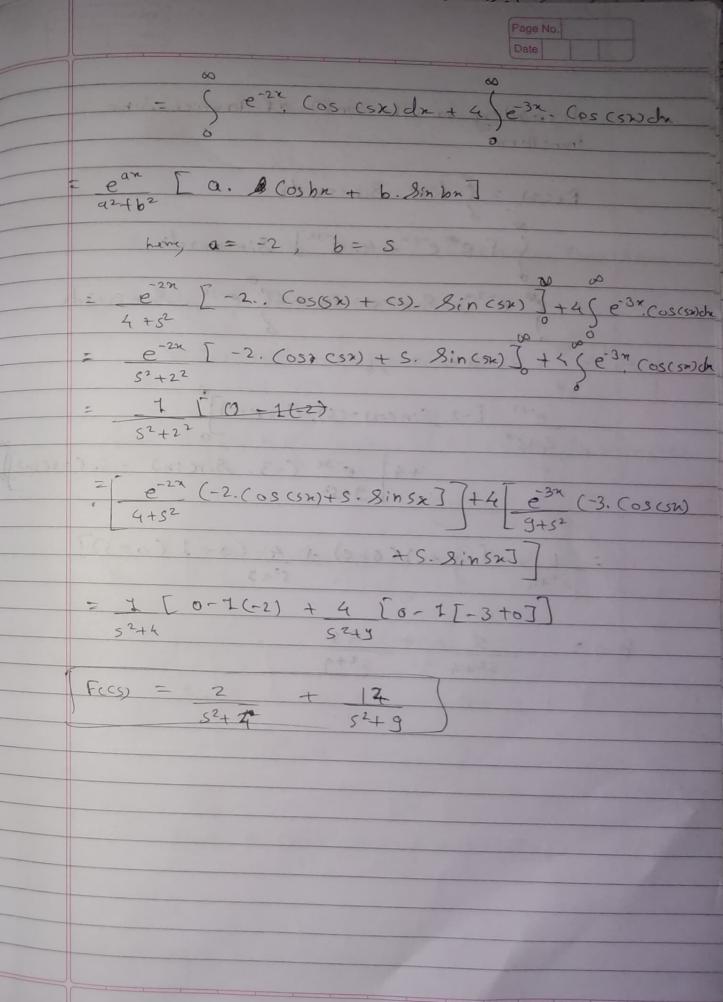
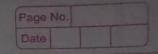
Date Unit! 3 Fourier Trunsform (5-6 marks) (3) Dela of fourier Transform Fourier Transform of for is given by Inverse of Fourier Transform  $f(x) = 1 \quad \text{fr} \quad f(s)e^{-isx} \quad ds$ Fourier Cosine Transform FC(s) = ( P(x) Cos(sx) dx Fourier Sine Transform Fs (s) = ( fcx) Sin (sx) dx





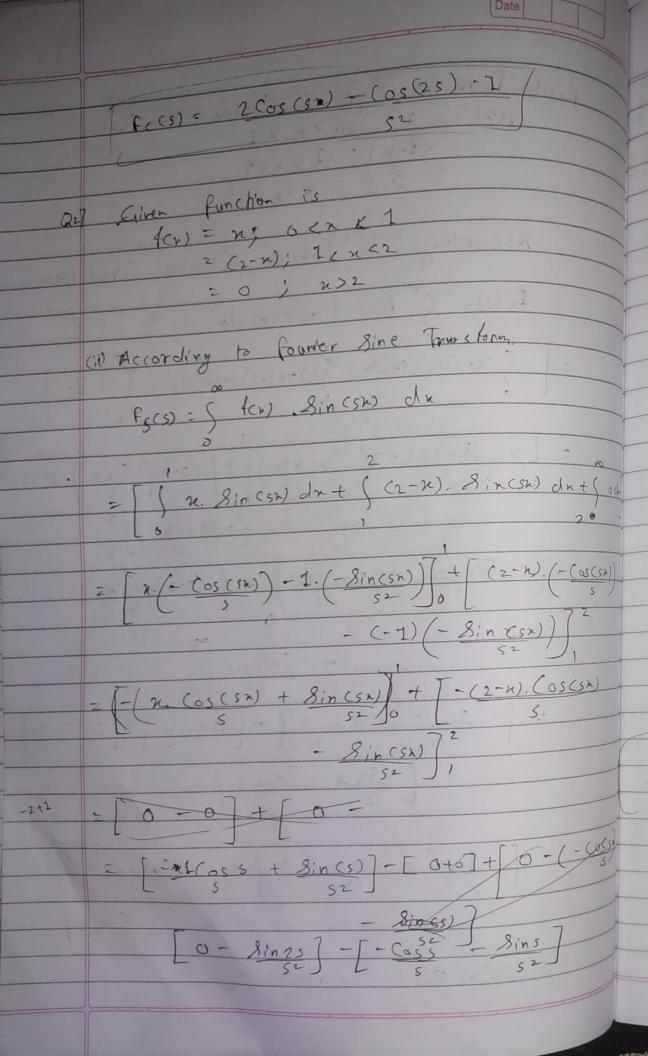


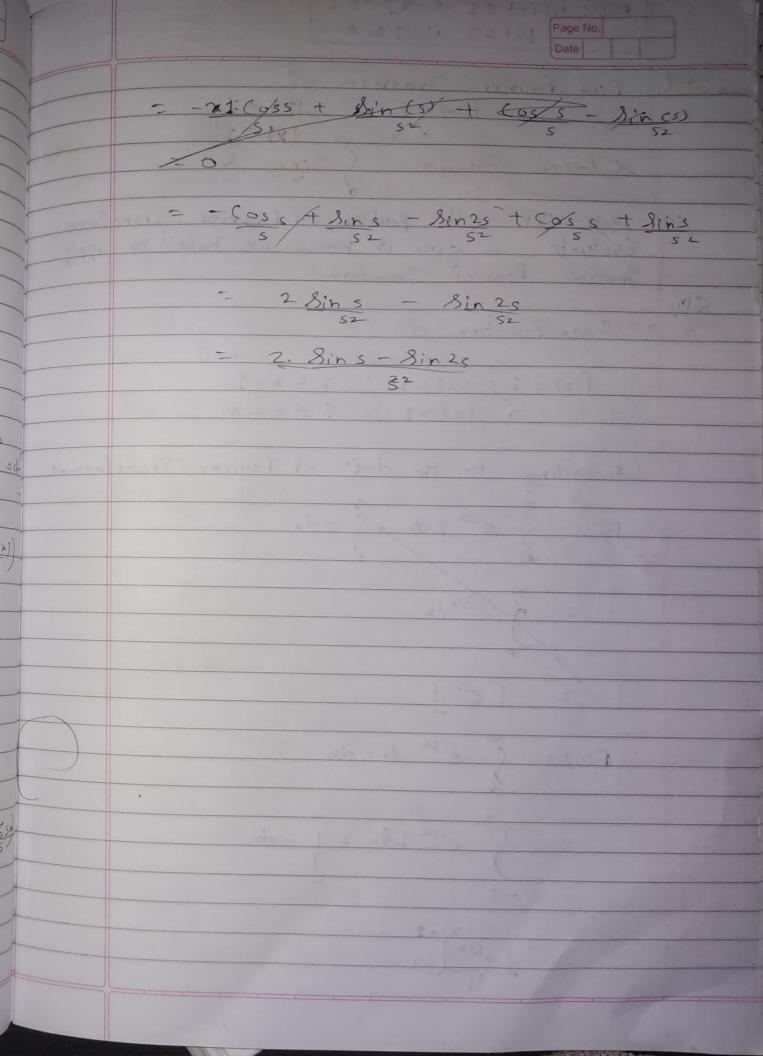
(ii) According to the defin of townier sine transform Fscs) = 5 fcw. Sincsxida = { [ & e-2x + 4. e-32] Sin(xx) dx = e<sup>-2n</sup>. Sin (sx) dx +4 ( e<sup>-3m</sup>. Sin (sx) dx  $e^{-2\lambda}$  [-2. 8in(sx) -(S). (csxsx)]  $4+5^{2}$  +4  $e^{-3x}$  (-3. 8in(sx) - S. (csxsx)]  $9+5^{2}$ = 1 [0-1(6-5) + 4 (0-1 (0-5)] 52+4 52+4



Find Fourier Sine & Cosine transform. f(m) = x; 0 < x < 1 = (2-x); 1 < x < 2 = 0; k>2 (i) According to fourier Cosine Transform Fc(s)= go f(x) (os csn) dm = [ (x. (os (sx) dx + ) (2=x). (osesx) dx + ) 0 dx = [x(Sinsn)-](-(0575k)]+[(2-x)[Sinx]-(-1)  $\left(-\cos(sx)\right)^{2}$ = (n. 8in(sn) + Cos(sn)) + (2n) Sin(sn)

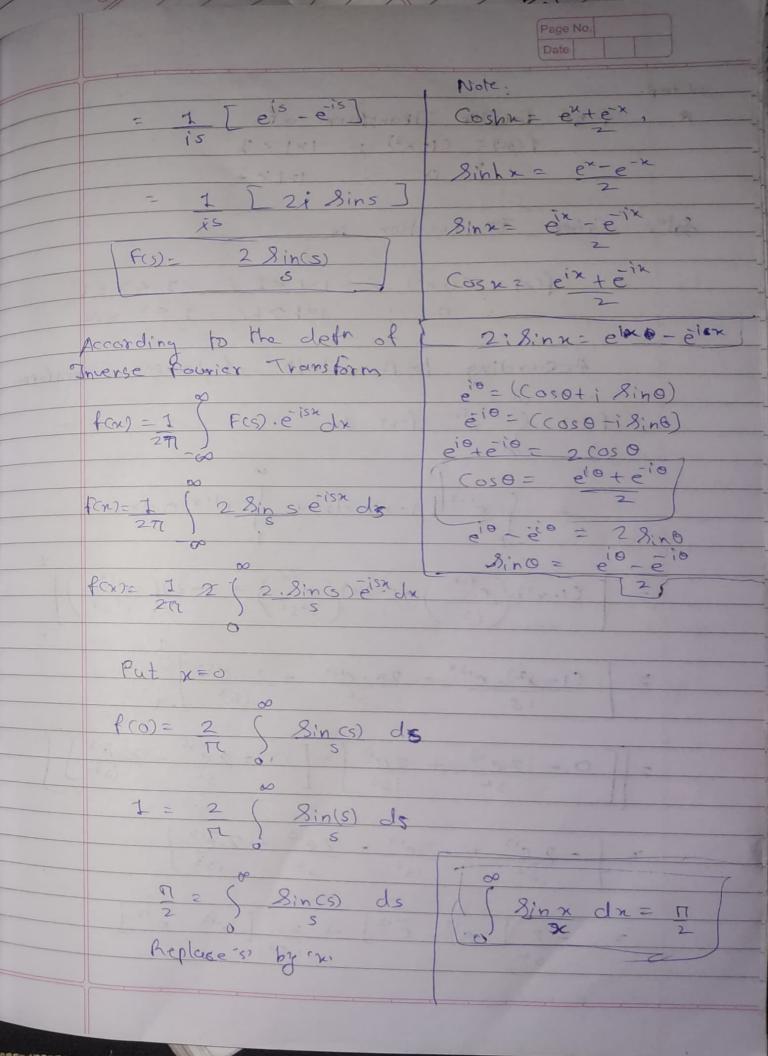
s 2 - (os(su) -[ Sin 8 - Coss ] Sin/s + Coss - 1 + - Cos28 - Sinst  $\frac{2(05(5))}{5^{2}} - \frac{(05(25))}{5^{2}} - \frac{1}{5^{2}}$ 





MOLES! MILLI-1x1 > 7 = 2) 1 to 00 , age No. Date Rital Fourier Transform of AR 11. Jung fcn)=1; |K1 <7 = 0 / p (x) >7 I hence Evaluate Sink dr. (3) Note: It in the problem of foldrier Transform Evaluate is given it means we have to apply.

Inverse Pourier Transform Soln Given Function is f(x)=1; 1x1<1; - I < x < 1 20; |x17] 1 = x < 80 According to the deft of fourier Transformer F(s) = S eisx 1. dx x 0 dx = geiszdx FCS) = ( éisn fcmdn z feisx tdx + fodx [esx]-1



\* Rind Pourier Transform of With Imp. f(x) = (1-x2); (x1 ≤ ] 0 12171 Solve Given Tr Function is €(x) = (1-x²) y'. 1x1 ≤1 / -7 ≤x ≤1 = 0; NY72; 7 5 x 5 x According to the defin of fourier Transfer F(s) = S eisx f(n) dx = [eisx (1-n2) dx + ] eisx. odx  $= \frac{(1-x^2) \cdot (e^{isx}) - (-2x)(e^{isn}) + (-2)(e^{isx})}{(is)}$  $= (1-x^2) \cdot e^{isx} - 2n \cdot e^{isn} + 2 \cdot e^{isn}$  $0 - 2e^{is} + 2e^{is} - [0 + 2e^{is} + 2 \cdot e^{is}]$  $\frac{1}{5^2} - \frac{2e^{i5}}{5^2} + \frac{2e^{i5}}{5^3} - \frac{2e^{i5}}{5^2} - \frac{2\cdot e^{i5}}{15^3}$  $\frac{2}{5^{2}}\left[e^{i5}-e^{i5}\right]+2\left[e^{i5}-e^{i5}\right]$ 

Date

