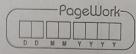
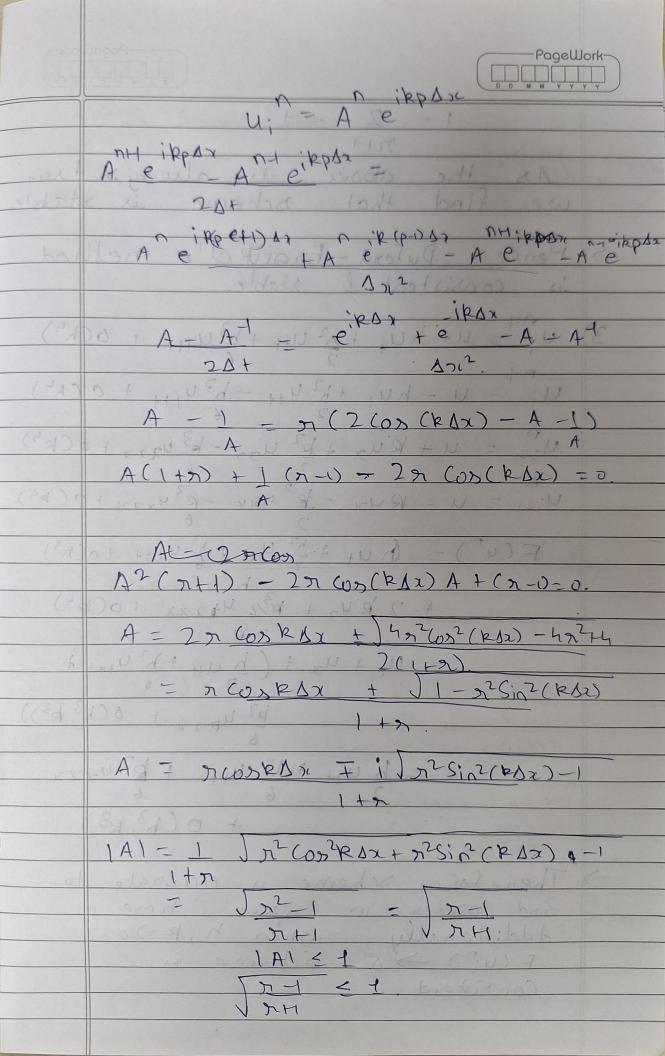


Similarly, STOCA 1 11 80 YRH = 2 yo + B(2 1R) 12p=19pH-19p ZR = - X 40 (X-1) + B(22+2222)+82 2: Zp= x yo(x-1) + x x x + B(x - 1)
(x-1) e) y = x x y 0 + B(x + 2x + . n -1) 1 (1) of xxx (2) xx + . . . 1) f) y = (40+ (1+ (2) (1+)+); (1+) + C, K(.(\(\lambda\)) - \(\frac{1}{2}\)
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+ (\ $\frac{1}{4} \left(\frac{h^2((\lambda h + 1)^{n-2} \cdot n - 1)}{e^{\lambda t} + 1 + t} \right) = \frac{1}{4^2 + 1}$ Jeho (Aht) yo) in Hence in depends only on)



2) I At=h, Doler, Debie unt-uthurthauth har uth har uth to chr) UIH = U + RUN + RT YAX + RT YAX +OCKT Substituting, 1 Substituting, F(u;) = (u;) = (u; -u; -u; 13,12 = 2(hutt + h3/6 4++ + o(h5)) 1-12 (Utpluxx +0(k))-u-blux = u/+ h2 u/+ + o(h4) - ux2 $= (k^{2} + k^{2} + k^{2} + k^{2})$ $= (k^{2} + k^{2} + k^{2} + k^{2}) + o(k^{2}, k^{2})$ $= (k^{3} + k^{2} + k^{2} + k^{2}) + o(k^{2}, k^{2})$ -) The above arises as $U_{+} = U_{xx}$ from transient heat conduction. Therefore equation is consistent as for h, k > 0, we get F(4,1)->0 Using Von-neumann stability,





1-2151 As the above is always true we find that scheme is stable > Mence, Dufort-Frankel's method is consistent & stable. 3) u. = u+ hu, + h2 u+ + b3 u++ + 6(h5) $u_{i}^{+} = u_{i} - hu_{i} + h^{2}u_{i} - h^{3}u_{i} + o(h^{3})$ 41 = 4 + Kux + k2 uxx + 0 Ck2) V; - = U - Ryx - 12 4xx - 123 4xxx +0 (124) F(u;) - (h u + + + + + o (h))

+ 2 k u + + + + + o (k)

+ 2 k u + + + + + o (k)

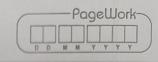
+ 2 k u + + + + + o (k) 1- Uf + Yx + (h ut + h 4++++ 6 4 4 to (L3, R3)) 2 - b 4+ + 12 4++ + b2 4xxx + O(K3, R3) Therefore ocheme is accurate to 3nd onder in space & time. Additionally when h, k to F(u:) > 0 | Schame is

Consistent.



A Stability=> Ale Ale PAN CAE PROMITERON TO iRDX _IPDX A-1 + c e (-e) (-2).

A-1 + i 2 c x Sin (2 Dx) -- 0 A = 1 -1; 2(2 Sin (PD)) 1A1- 11 + 422 Sin2 (RA) 1410>19) -> Explicit ocheme las un conditionally unstable. Lax Method: F(u;) = u + hu + h2 u + h3 u + h - u - b2 u 2 + 0 cbh) + C 2kya + R3/34xxx + O(kh) F(u; 1) - u++ cux + (h u++ + h2 u++++ 6(h3) + - k2 yx + o(k4) + c k3 yxx to (k3)) F(u,") = h U+++ + 12 U+++ - 12 U22 + Ch3 U222+
+ 2 (k3, k3) 6 2h 6



-) This scheme is also 3nd order h, k > 0 F (u, 9 > 0. So, it is consist end Stability =) A e A e REPHIDAX DE POPULAX

+ C A e REPHIDAY - A e REPT DAY

200 A-12 (ekt eikbr) + Dt ipprilen) = thought Dt amodate Miles A - CODRDX + ica Sin(RDX)=0 A = CODRD2 - i Cr SiaRD2 1A 1 = J COSTRD2 + CZ2 SiaZRO2 < 4 (232 1) Sin PAX = 0. Scheme is conditionally stableif D+ 6212