29/7/24 Books-Sidel Ø dv + 02 50 12 + (N-8) 500. - N=0 → 0 Glosgerman Sidel Sexn 4.2 1. Finite Domain - Eg" more complicated 2. Infinite domain - Eg simple - Domain -pLSL00 Egn O converted by to by = du Smin SZ Smax Methods to solve O: - It Tox2 DFTCS - Explicit Euler + Central diff @ BTCS - Implicit Euler + CS D 1 (FTCS + BTCS) "SE(a,b), N, $h = b-a = \Delta S$ $+ \in (0,T]$, M = k = IVm & V(Im, t) Um - Um = Um+ Um-1 AU=F U= AIF Crank - Nicolcon Schema Transformat of for Black - Scholer: $V(s,t) = \exp(-r(T-t)) \nu(y,T)$ = exp(-vT) v(y; T)

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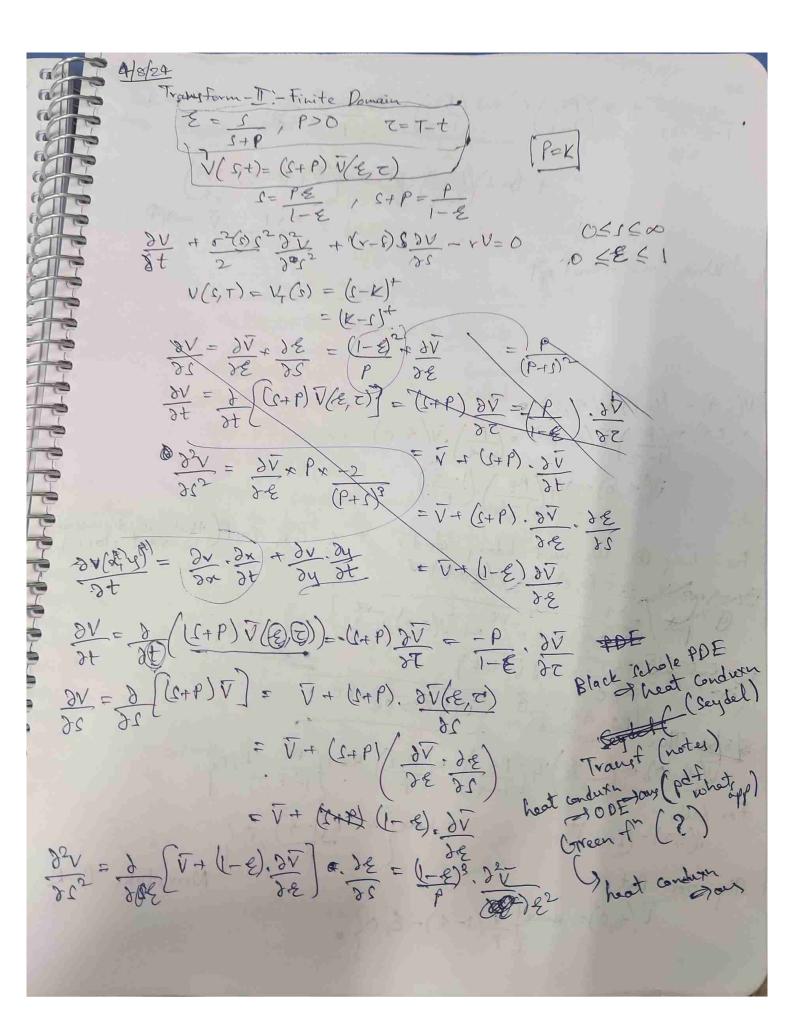
y= lns 7= T-t V(st)= e ~ (1/4, 7) 31 + 6-6)(20 + 705,35 - LA=0 / 1/2 - LA=0 + e (T-t) Dv. Dot

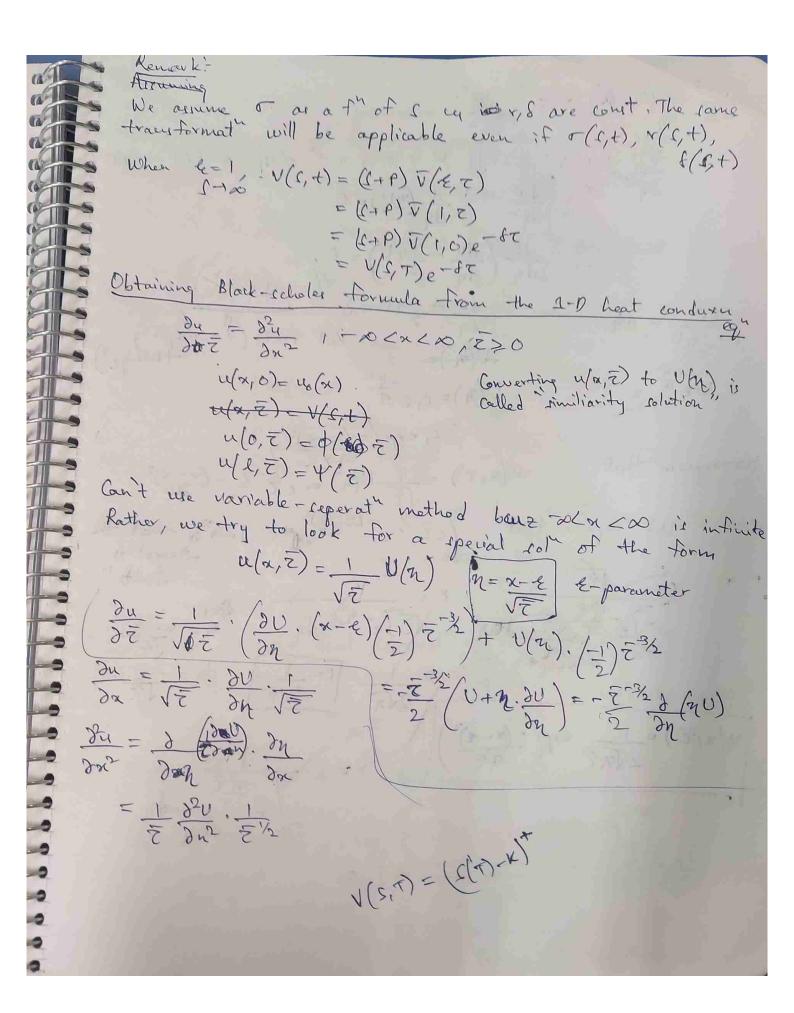
15 506 3t = 10 26-2(1-f) N = re-r(T-t) - e-r(T-t) V $\frac{\partial c}{\partial N} = e_{-L(L-f)} \frac{\partial A}{\partial N} \cdot \frac{t}{1}$ = 6-4(2-4) (3 (3) 3 - 1 3 d) 5 d (3 d) 5 d (3 d) 5 d (3 d) 5 d (3 d) 6 d) = e-r(T-t) (Vyy - Vy) xv-V=+ (x-E) vy + 1020 (vyy-vy) -xv=0 x=y+(r-f-2)~ - V2 + (- 8 - 52) vy + 52 vyy = 0 V v(y, 0) = (87 K) て= 」かって、い(V(y, z) = (a, Z) 36 56 36 mg = 12. (2-8-05) + gray 105, 15 30x 300 + 34 25 = 0

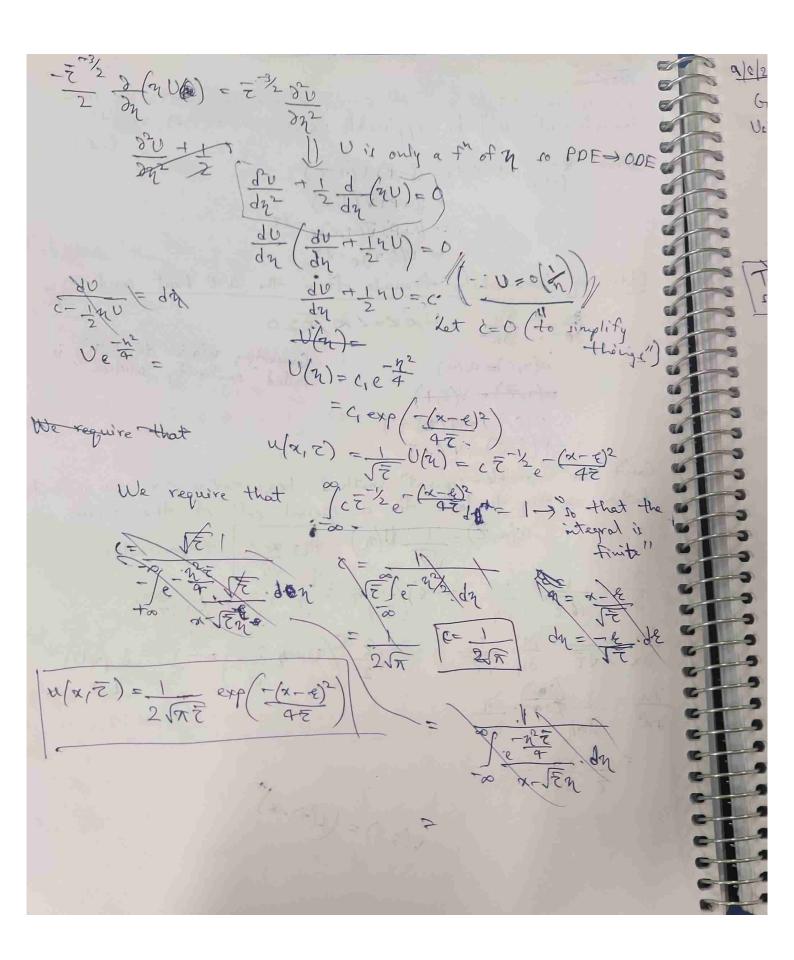
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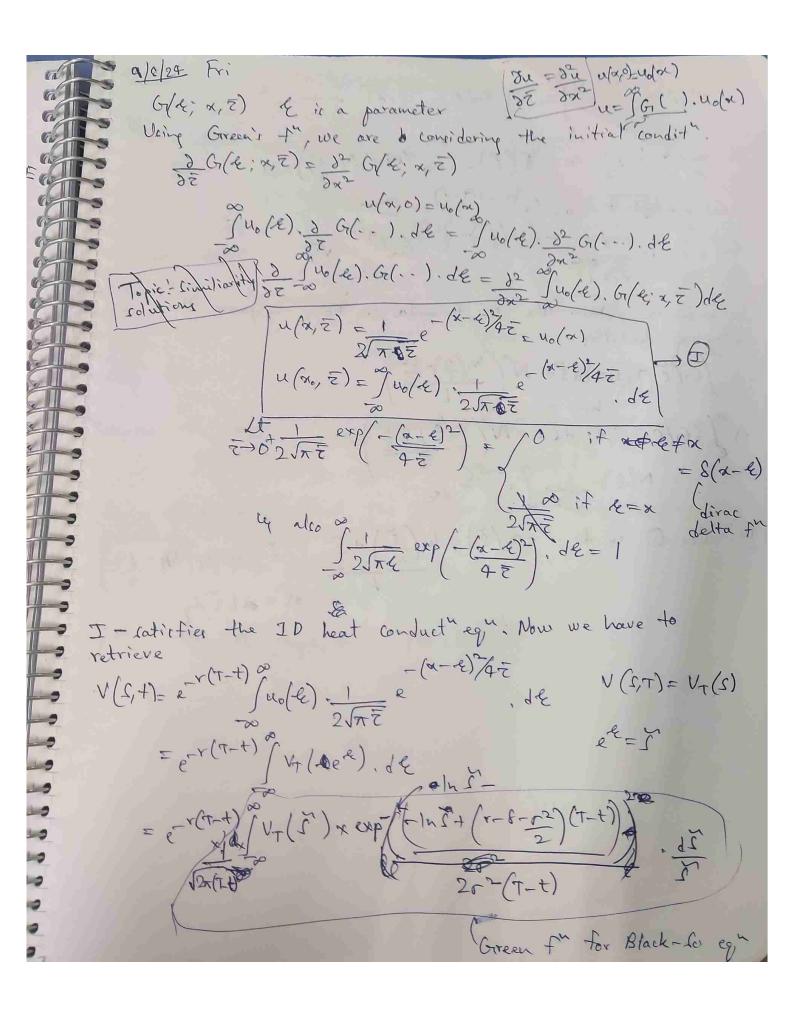
$$x = y + (r - s - \frac{1}{2}) \tau$$
 $x = \frac{1}{2} s^{2} \tau$
 $v(y, \tau) = \sqrt{x}(x, \tau)$
 $\frac{\partial v}{\partial \tau} = \frac{1}{2} \frac{\partial v}{\partial x} + (r - s - \frac{1}{2}) \frac{\partial v}{\partial x}$
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 $\frac{\partial v}{\partial \tau} = \frac{1}{2} \frac{\partial v}{\partial x} + \frac{1}{2} \frac{\partial$

Suppose that r, S, or are firs of t, then the transformat will be x = lu(s)+ {(x(s)-s(s)-o2s).ds no transformat like there T= 1 (07/1).4 $V(s,t) = e^{-\int_{s}^{s} r(s) \cdot ds} u(s,t)$ $V_{c}(s,t)=0$, s=0Vp (-(,+)= Ve= Vp+ Ke-r(T-t) Vp (s,t) = s-Ke-r(T-t) -s, s-100 $S = Ke^{st}$, t = T - 2T, $9z = \frac{2T}{\sigma^2}$, $9z = \frac{2(r-6)}{\sigma^2}$ V(s,+)= V(Kex, T-22) = DV(x,2) 3x2 32 $V(x, \tau) = \text{Kexp} \left(\frac{1}{2} (9s - 1) x - (\frac{1}{4} (8s - 1)^{2} + 9\tau) \right) \right)$ = $max(s - K_{10})$ where $y(x, 0) = \int$ V(s, t)= max(s-k,0)









V(s,t)= 2-(1-t) du (s). Co(s, ...). ds. If m= r-5-52 cq E(5)= Sexp (4-5)(7-1))=9 Let b = of T - t $a = Se^{(\alpha - S)(T - t)}$ $Gr(--.) = \frac{1}{2\pi i e^{-(1n(\frac{C}{ie}) + \frac{62}{2})^2}/2626}$ In order to obtain the BS formula, we have to prove the) [Co(1) + (1) + 1 d 1 = N (m(a) - 62) PT: Use O u_1 do $n(\vec{s}) = l_1(\vec{s}) + b^2$ $\vec{s} = a exp(bn - b^2)$ $d\vec{s} = ab\vec{s} d\eta$

