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Numerical Methods for PDE
Homework

Given Problem:

Linear heat equation with homogeneous boundary conditions was given.
Implement the Crank Nicolson Method,
Perform computations with $N = 20$ and $N = 200$. $T=0.2$

Report the error.

Solution:

for $N= 20$ and $T=0.2$
Error = 0.005082

For $N=200$ and $T=0.2$
Error value = 0.000060

Observation from the results:

It is observed that Maximum error value likely to be occurred at approximately in the the centre of grid space(although it is not applicable for all cases, but at least for this case it occurred so). That is, if $i=20$, then the maximum error value was obtained at $i=10$, where 'i' is the grid space index. Similarly for $i=200$

Enter the value of N:

20

Error value=0.005082

Process returned 0 (0x0) execution time : 2.730 s

Press any key to continue.



Frag mich etwas



5:34 PM
11/22/2016

Enter the value of N:

200

Error value=0.000060

Process returned 0 (0x0) execution time : 3.130 s

Press any key to continue.



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Enter the value of N:

200

Error value=0.000060

Process returned 0 (0x0) execution time : 3.130 s

Press any key to continue.



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