Siwir2 Exercise 1:

Group:

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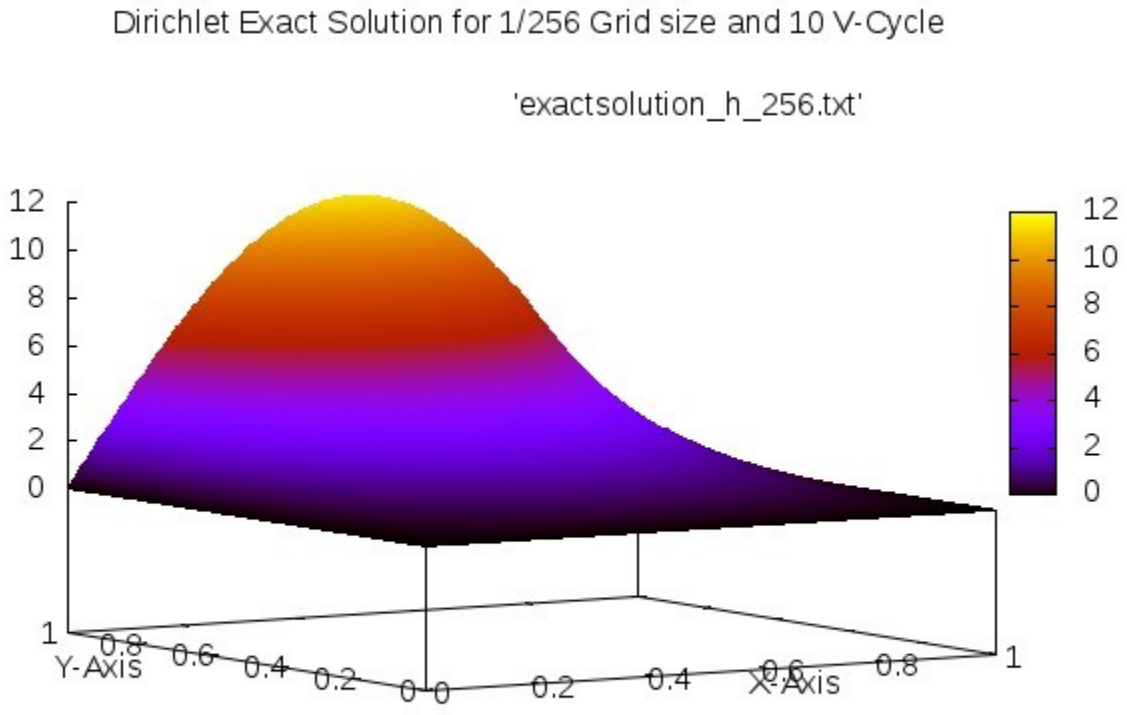
Grid size of 256 and 20 V-Cycles:

Dirichlet Problem:

Exact Solution:



Approximated Solution:

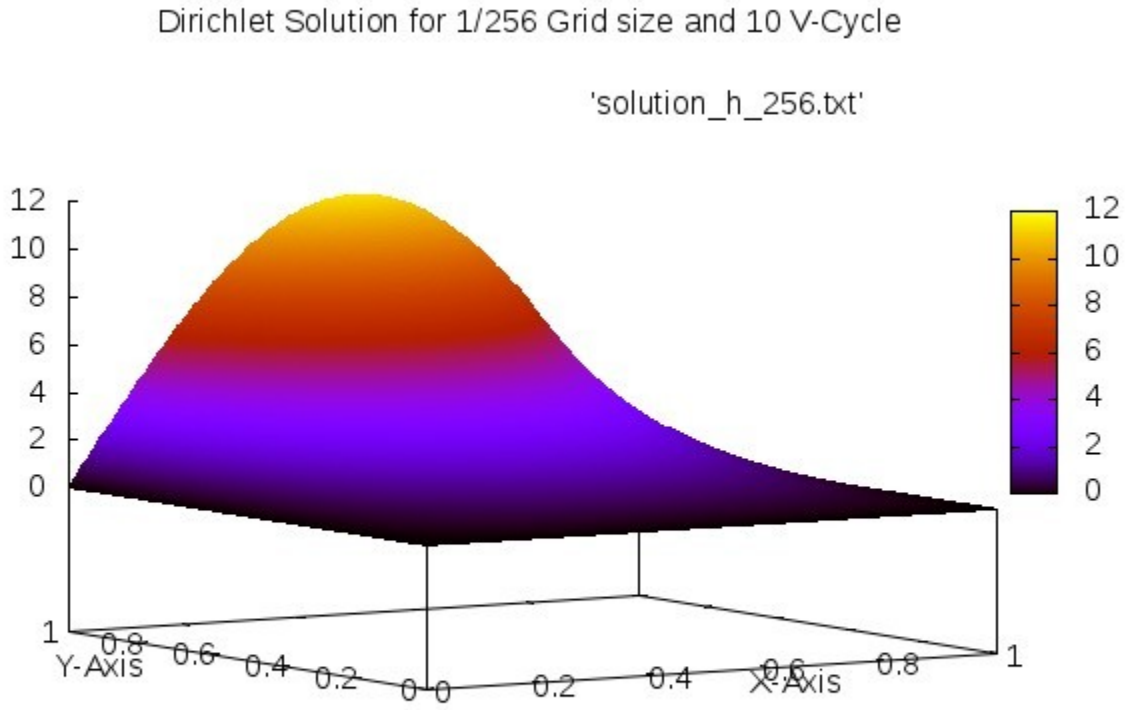
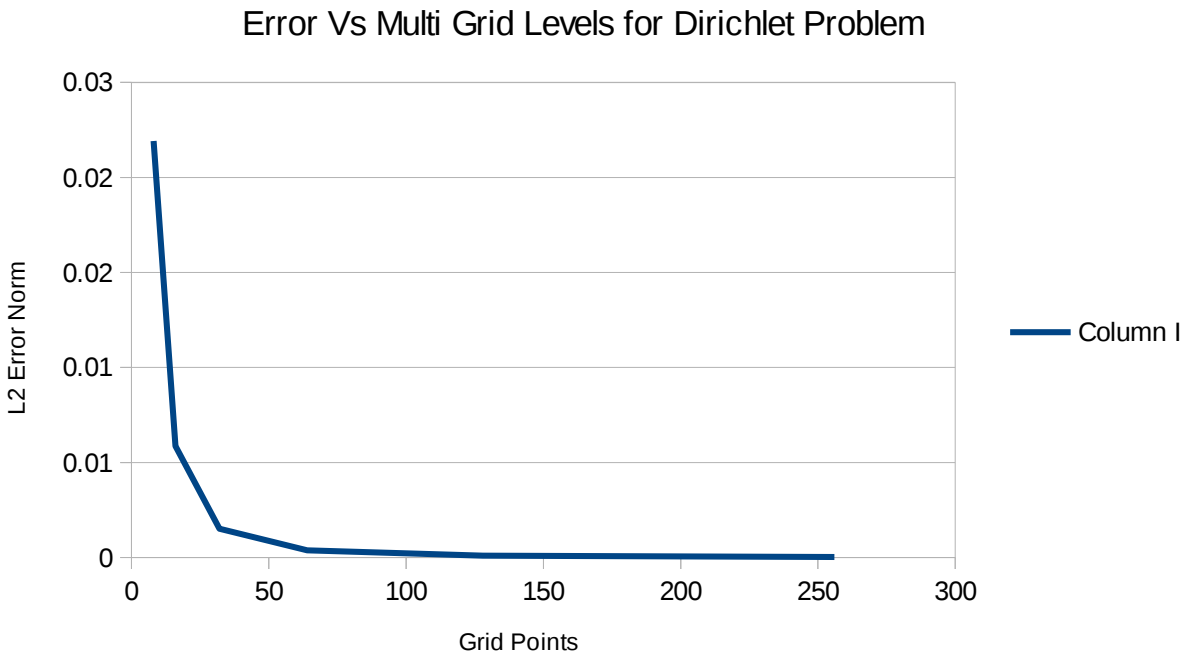


Table for different Grid sizes and calculated Norm:

Grid Point	L2 Error Norm
8	0.0219129
16	0.00586478
32	0.00151459
64	0.000384722
128	9.69E-005
256	2.43E-005

Plot:

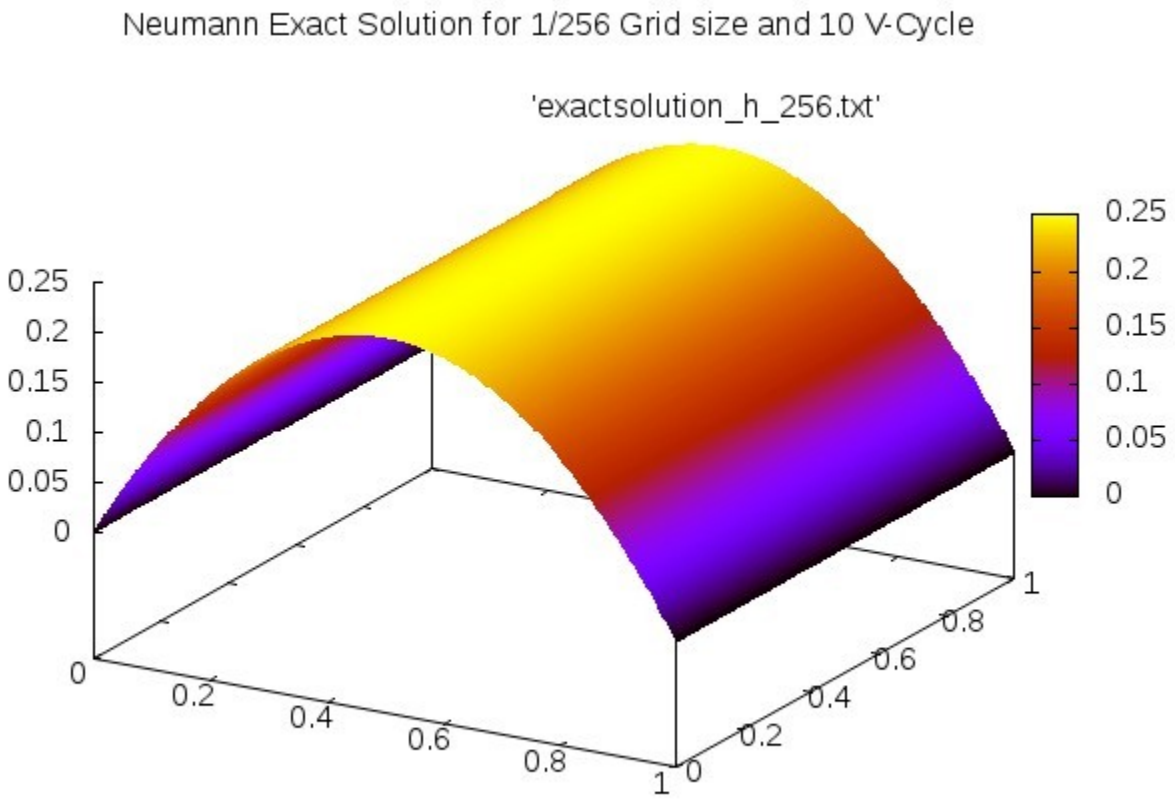


Conclusion:

So from the plot above we can conclude that L2 error norm decreases with increasing number of Grid points or decreasing mesh size.

Neumann Problem:

Exact Solution:



Approximated Solution:

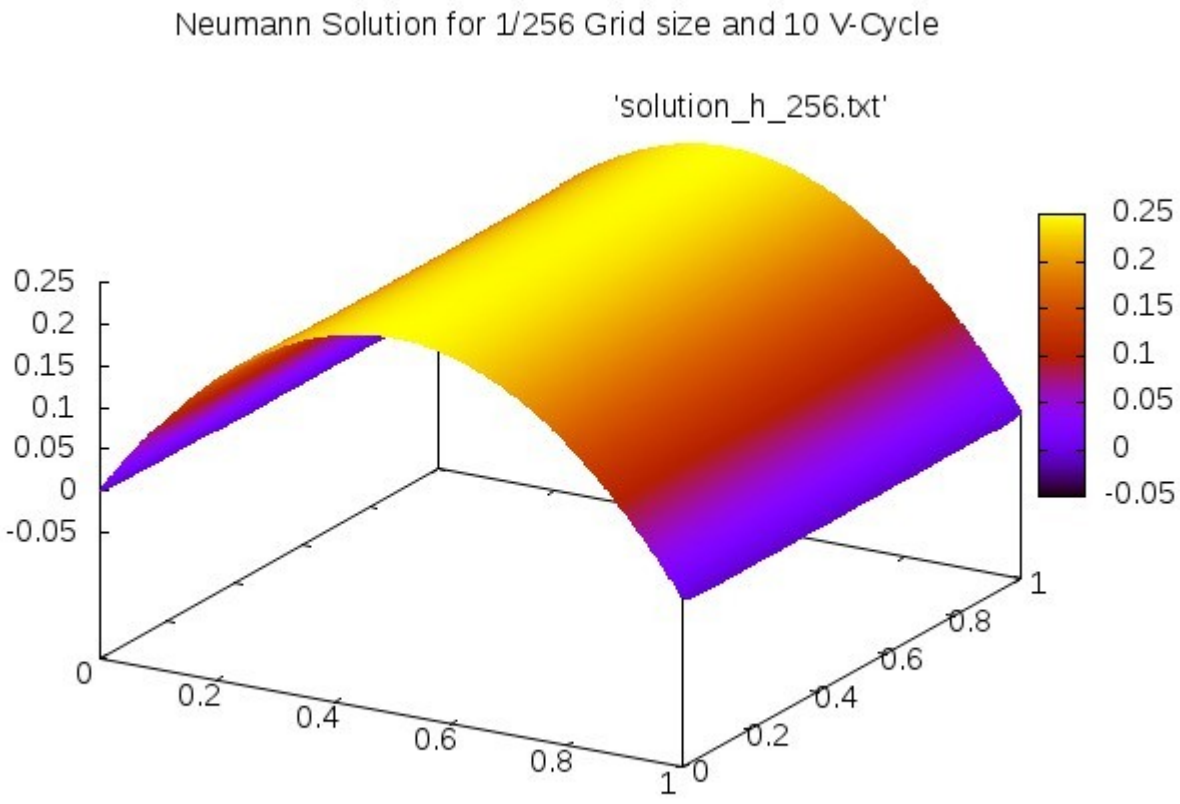
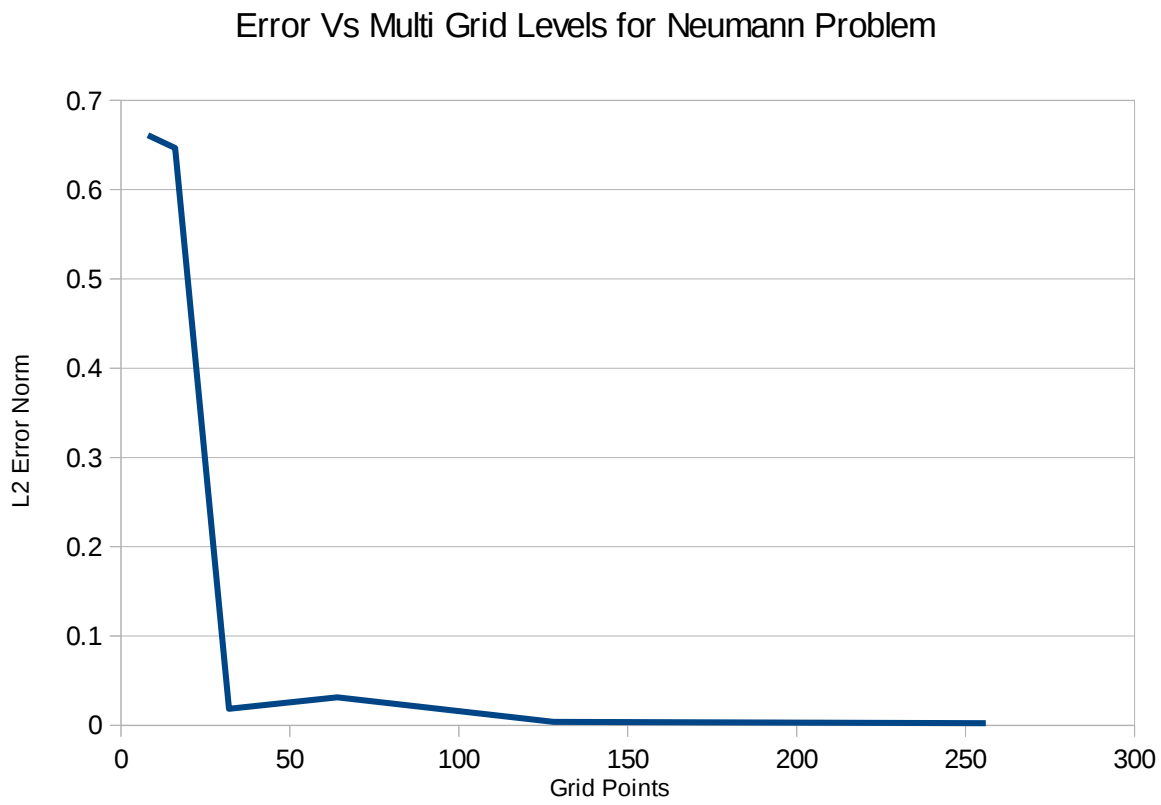


Table for different Grid sizes and calculated Norm:

Grid Point	L2 Error Norm
8	0.660871
16	0.64658
32	0.018368
64	0.0312854
128	0.00392084
256	0.00232327

Plot:



Conclusion:

So from the plot above we can again conclude that L2 error norm decreases rapidly with increasing number of Grid points or decreasing mesh size.