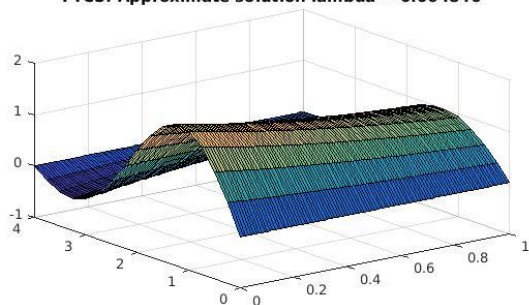


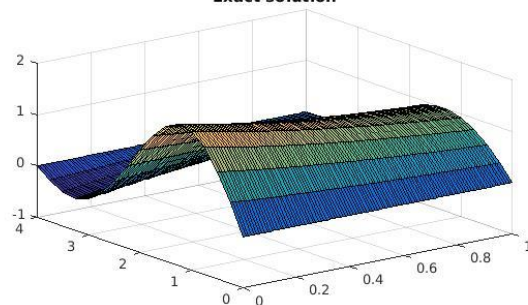
# LAB 10

1)

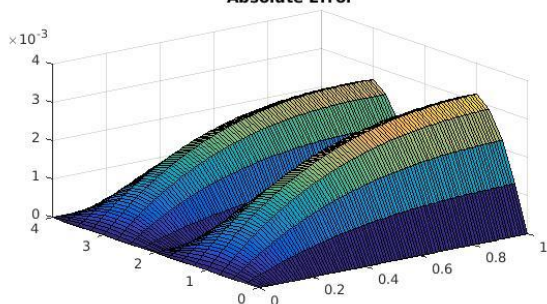
FTCS: Approximate solution lambda = 0.064846



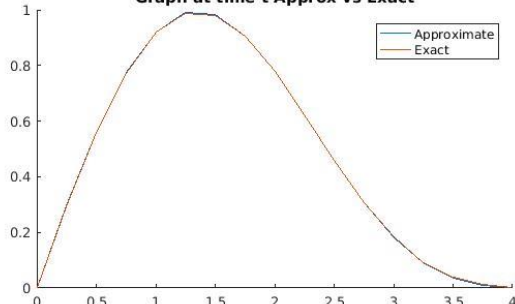
Exact solution



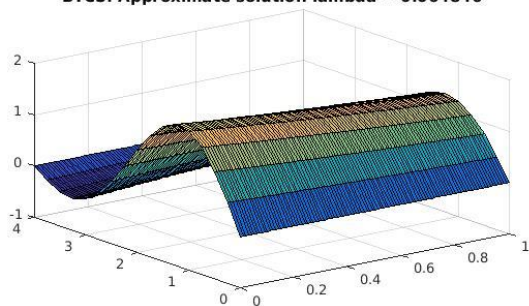
Absolute Error



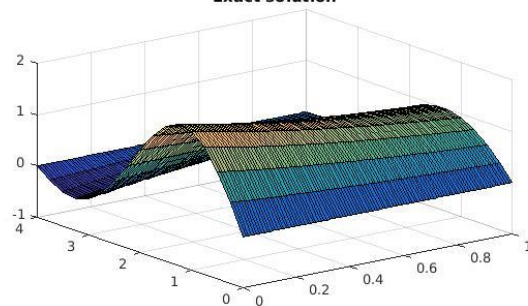
Graph at time t Approx vs Exact



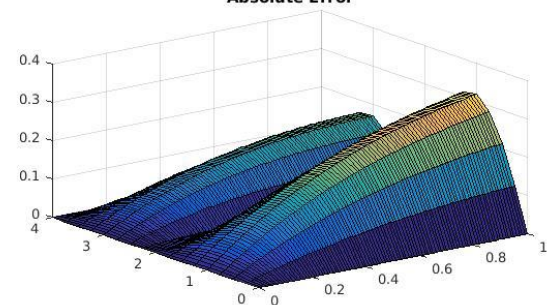
BTCS: Approximate solution lambda = 0.064846



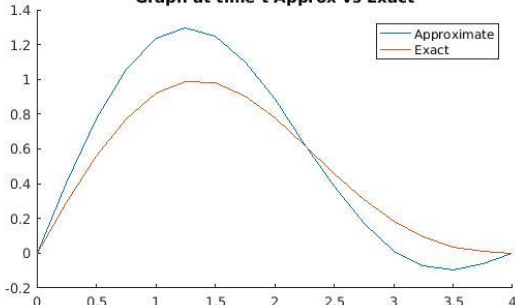
Exact solution



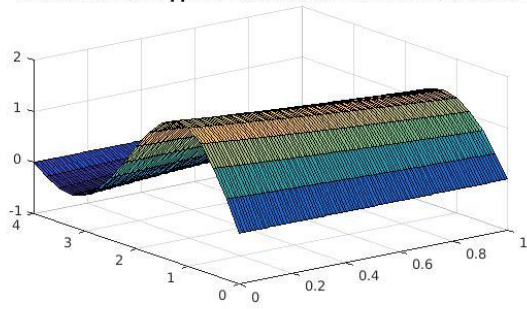
Absolute Error



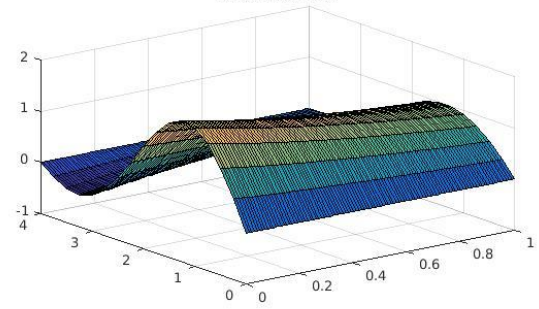
Graph at time t Approx vs Exact



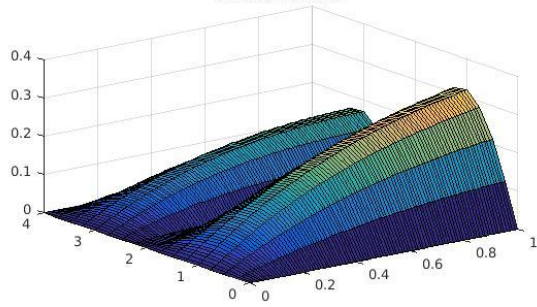
**Crank-Nicolson Approximate solution lambda = 0.064846**



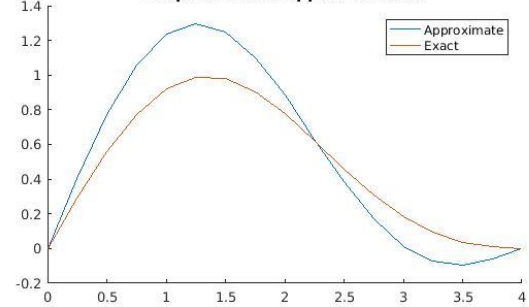
**Exact solution**



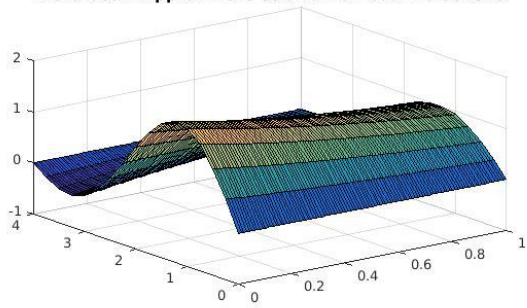
**Absolute Error**



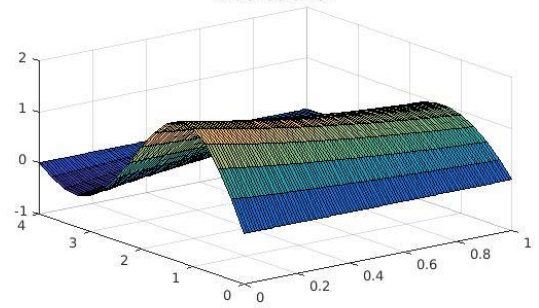
**Graph at time t Approx vs Exact**



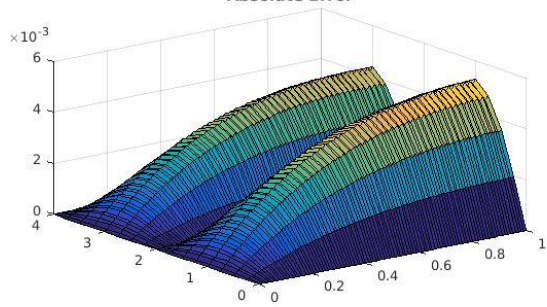
**Richardson: Approximate solution lambda = 0.064846**



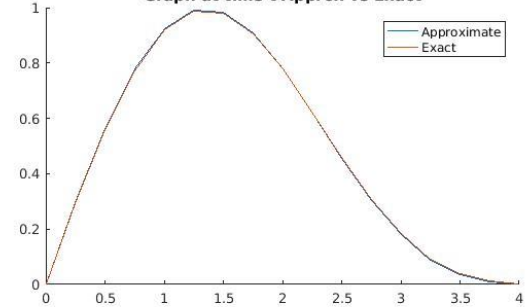
**Exact solution**



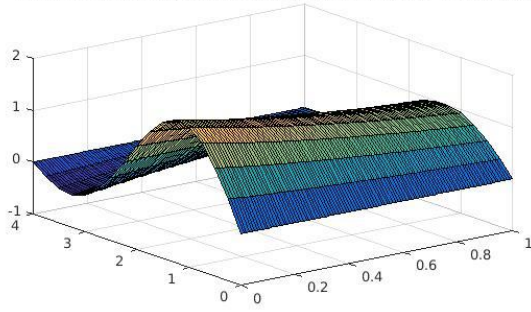
**Absolute Error**



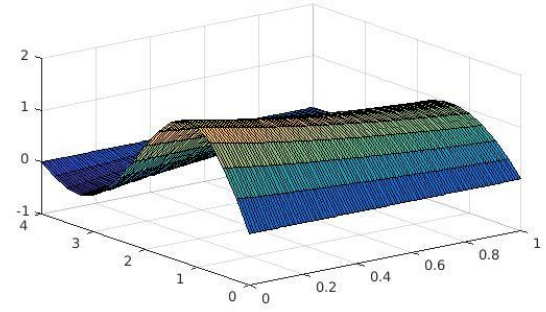
**Graph at time t Approx vs Exact**



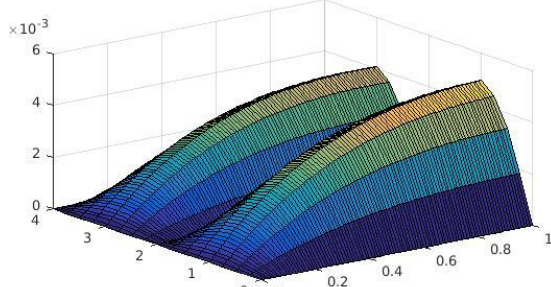
DuFort-Frankel: Approximate solution  $\lambda = 0.064846$



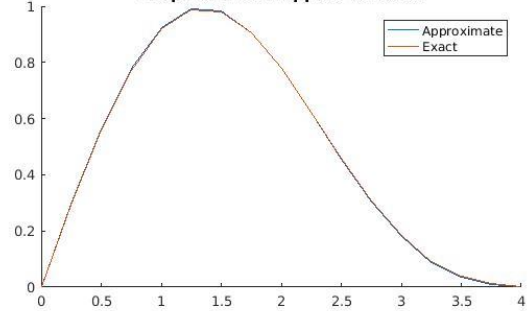
Exact solution



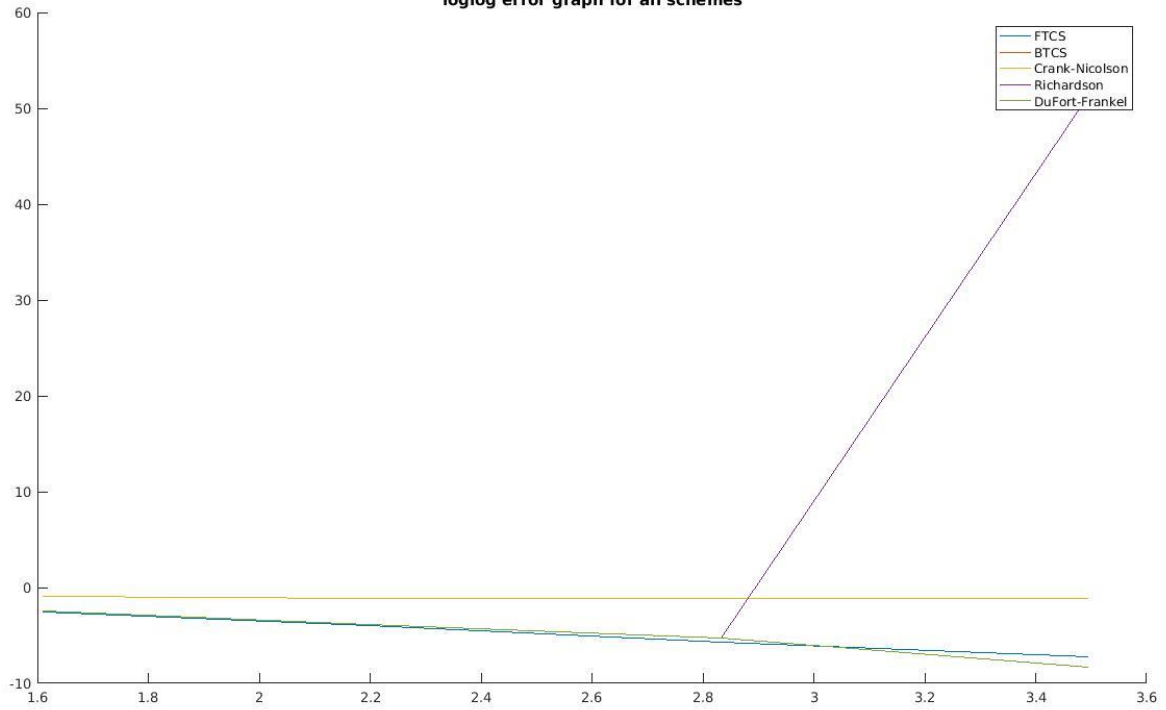
Absolute Error



Graph at time t Approx vs Exact



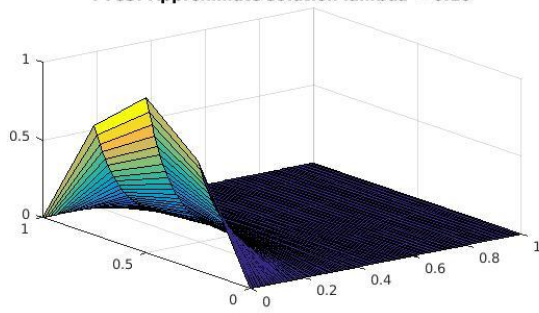
loglog error graph for all schemes



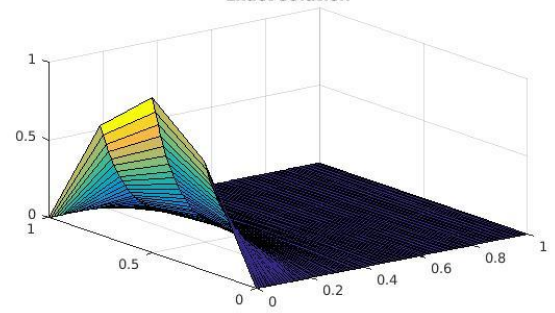
2)



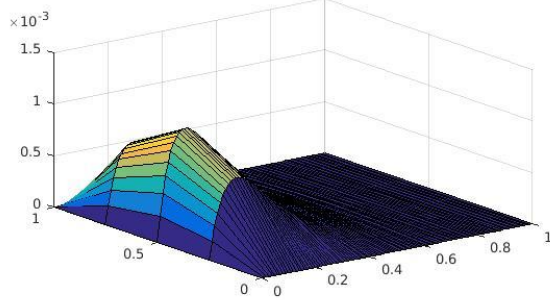
FTCS: Approximate solution lambda = 0.16



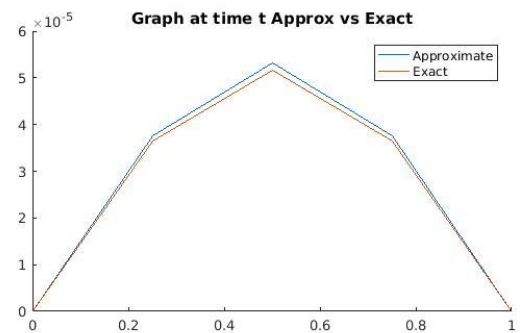
Exact solution



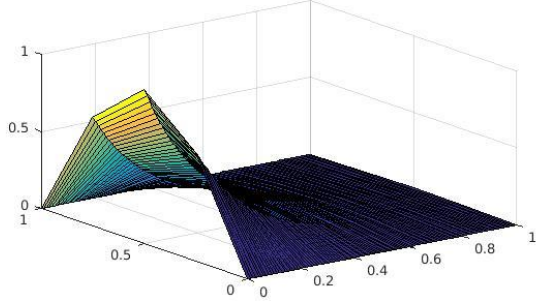
Absolute Error



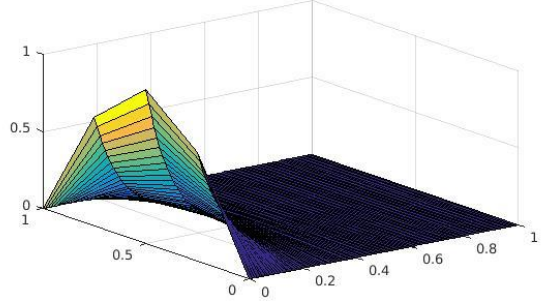
Graph at time t Approx vs Exact



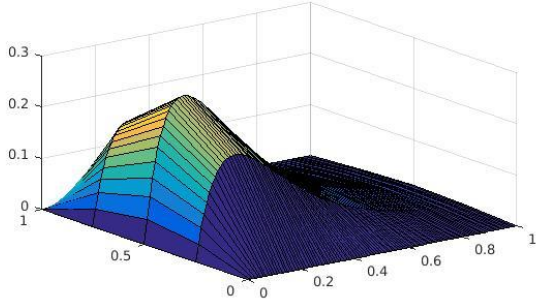
BTCS: Approximate solution lambda = 0.16



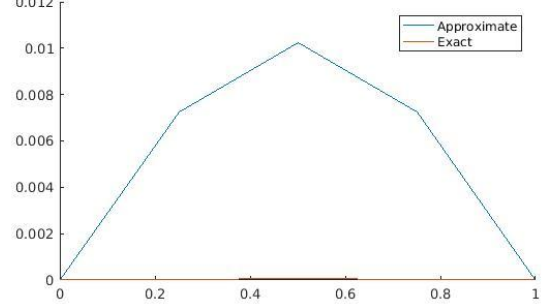
Exact solution



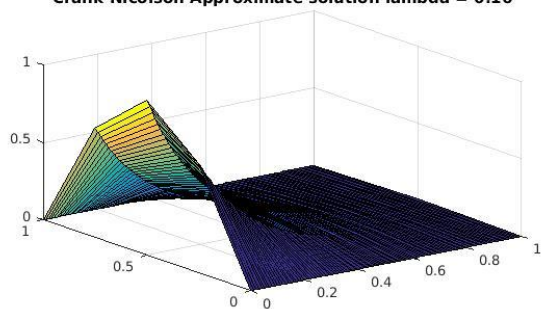
Absolute Error



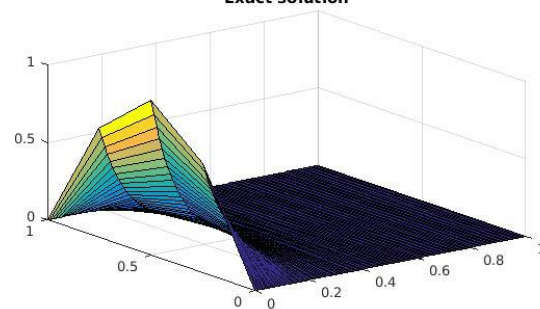
Graph at time t Approx vs Exact



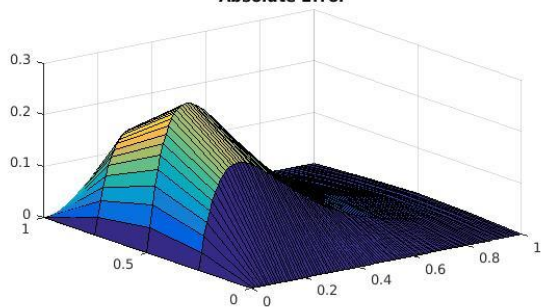
**Crank-Nicolson Approximate solution lambda = 0.16**



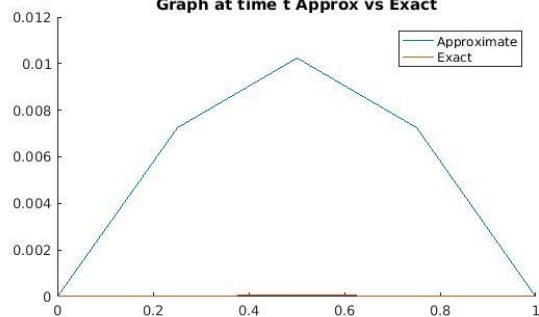
**Exact solution**



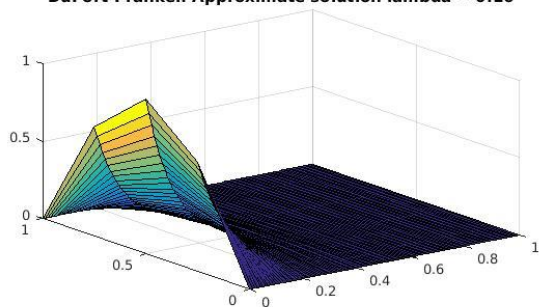
**Absolute Error**



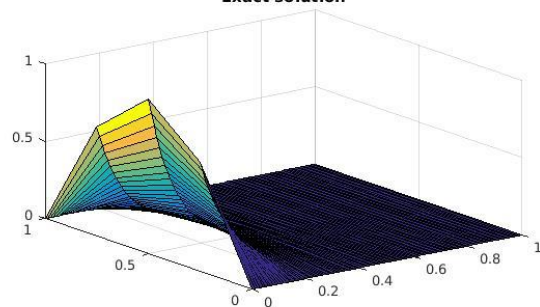
**Graph at time t Approx vs Exact**



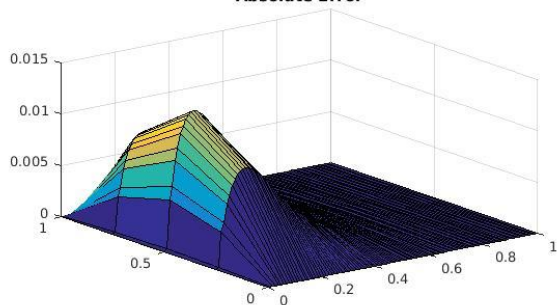
**DuFort-Frankel: Approximate solution lambda = 0.16**



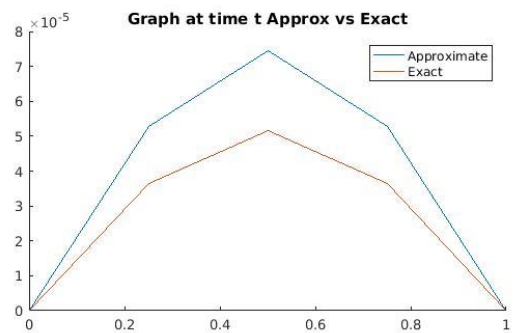
**Exact solution**

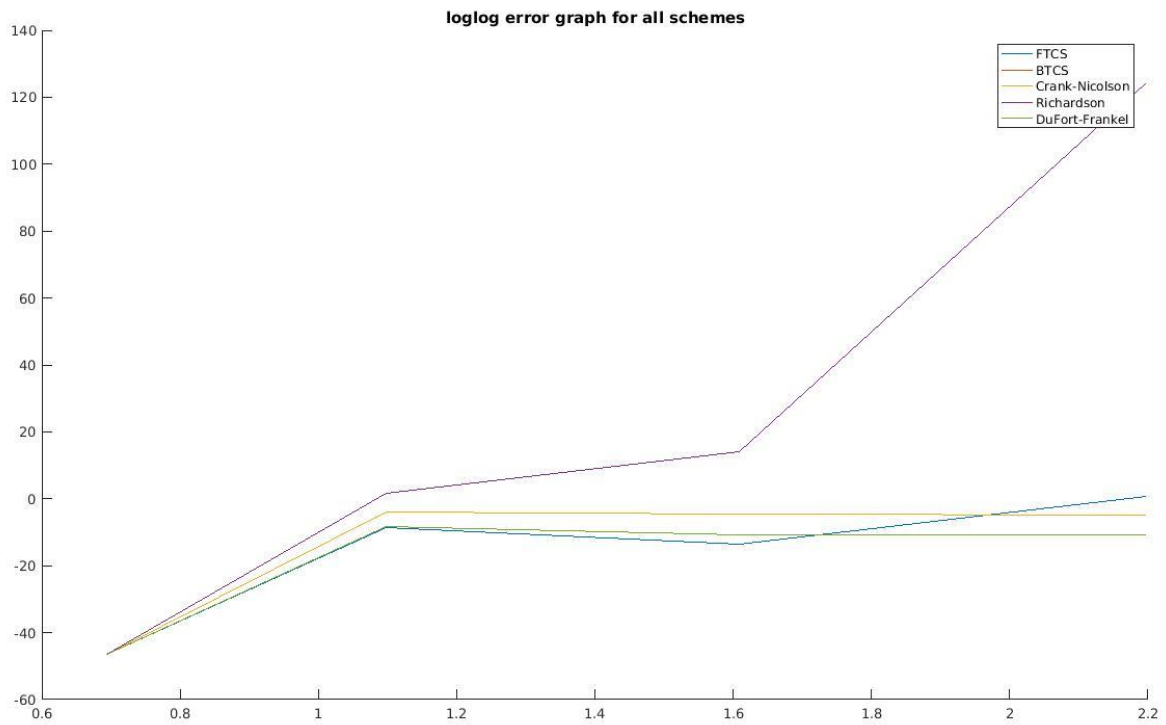


**Absolute Error**

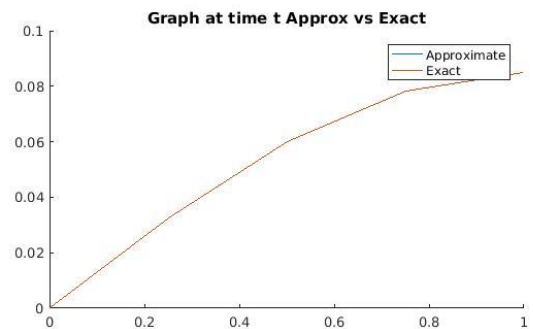
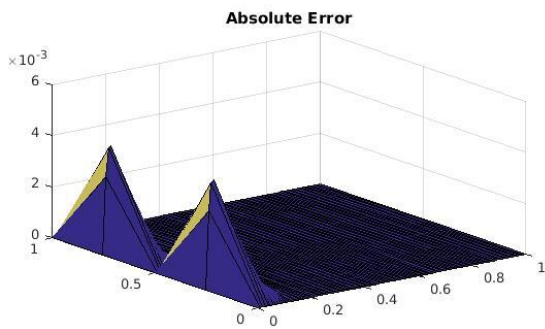
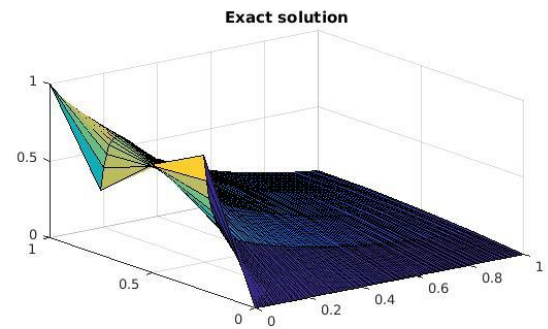
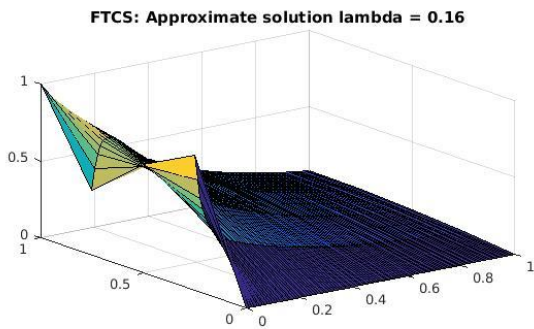


**Graph at time t Approx vs Exact**

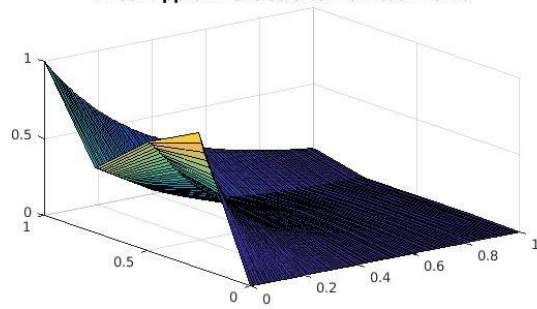




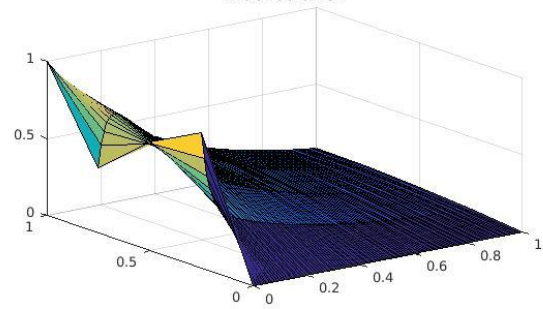
3)



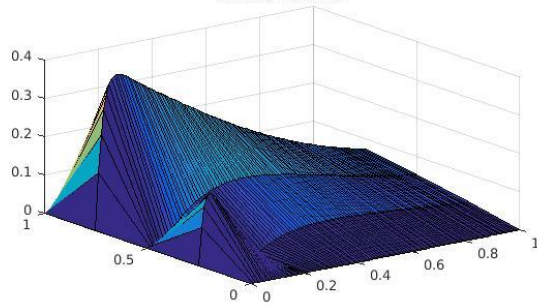
BTCS: Approximate solution lambda = 0.16



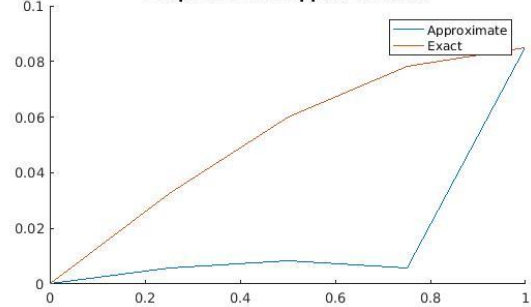
Exact solution



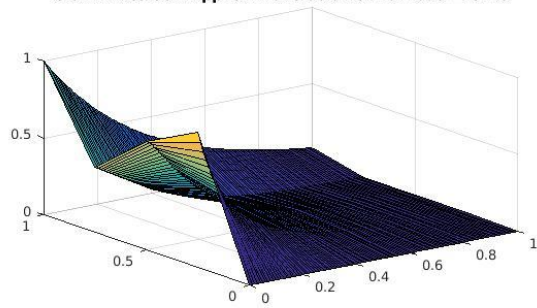
Absolute Error



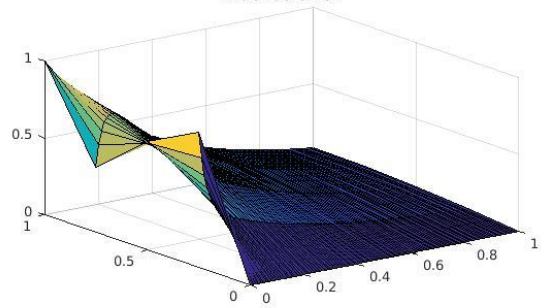
Graph at time t Approx vs Exact



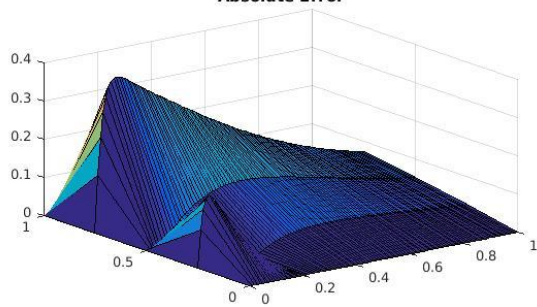
Crank-Nicolson Approximate solution lambda = 0.16



Exact solution



Absolute Error



Graph at time t Approx vs Exact

