Replicating Strategy - Question 1b

Given values

S0 = 72.99; % Closing price

mu = 11.75/100; % Annualized return

sigma = 24.98/100; % Annualized Volatility

rho = 1/100; % Annualized interest rate

K = 80; % Strike price

T = 42; % Period - 2 months (21 days per month)

# Creating the plot

N = 50;

delta\_array = zeros([1, N]);

for n=1:N

delta\_array(n) = Q1a(mu, sigma, rho, S0, K, T, n);

end

delta\_array

Compute the call option

d1 = (log(S0/K) + rho\*T)/(sigma\*sqrt(T)) + 1/2\*sigma\*sqrt(T);

c = S0 \* normpdf(d1) - K \* exp(-rho\*T) \* normpdf(d1 - sigma\*sqrt(T) )

c\_upper = 0.98 \* c;

c\_lower = 1.02 \* c;

The plot

figure(1)

plot(1:N, delta\_array, '-g', [1, N], [c, c], '-r', [1, N], [c\_lower, c\_lower], '--r', [1, N], [c\_upper, c\_upper], '--r')

title('Convergence Plot')

xlabel('Period')

ylabel('Hedging Stock')