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In[54]:= (* These are functions the call for a program to be loaded (Needs)
          the program being loaded is the standard normal density function (ndist)
          and the cumulative distribution function CDF *)

Needs["Statistics`NormalDistribution`"]

In[55]:= ndist = NormalDistribution[0, 1]
          CDF[ndist, .25]

Out[55]= NormalDistribution[0, 1]

Out[56]= 0.598706

In[57]:= (* Check this value with the cumulative normal distribution function
          on the class webpage *)

(* Loading parameters for the strangle, the exercise prices were
   selected to get the position approximately delta neutral *)

r = .06
T = .4
S = 48
A = 53
B = 47.25
v = .3

(* Formulas for d_11, d_12, d_21 and d_22 used to evaluate the N[d] *)

a = ((Log[S/A] + (((r + (.5*(v^2)))*T))))/(v*Sqrt[T])
b = ((Log[S/B] + (((r + (.5*(v^2)))*T))))/(v*Sqrt[T])
u = a - (v*Sqrt[T])
l = b - (v*Sqrt[T])

(* Solving for the prices of the call and the put and the position cost *)

Q = (S*CDF[ndist, a]) - ((A*Exp[-r*T])*CDF[ndist, u])
P = (S*(CDF[ndist, b] - 1)) - ((B*Exp[-r*T])*(CDF[ndist, l] - 1))
V = Q + P

(* Solving for the Gamma (G) and Theta (WW) and Delta (M) of the position *)
G = (1/(S*v*Sqrt[T]))*(PDF[ndist, a] + PDF[ndist, b])
W = (((S*v)/(2*Sqrt[T]))*(PDF[ndist, a] + PDF[ndist, b])) +
    (((Exp[-r*T])*r)*((A*CDF[ndist, u]) + (B*CDF[ndist, l])))
WW = W - (B*(Exp[-r*T])*r)
M = (CDF[ndist, a] + CDF[ndist, b]) - 1

Out[57]= 0.06

Out[58]= 0.4

Out[59]= 48

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Out [60]= 53

Out [61]= 47.25

Out [62]= 0.3

Out [63]= -0.300895

Out [64]= 0.304361

Out [65]= -0.490632

Out [66]= 0.114624

Out [67]= 2.18811

Out [68]= 2.69946

Out [69]= 4.88757

Out [70]= 0.0836874

Out [71]= 11.155

Out [72]= 8.38725

Out [73]= 0.0013205