EXAM FM QUESTIONS OF THE WEEK

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Week of October 22/07

An assymetric butterfly spread is created as follows (i) purchase 5 calls with strike price 12, (ii) purchase 3 calls with strike price 16, and (iii) sell c calls with strike price K (where 12 < K < 16). The payoff is 0 if the stock price is either less than 12 or greater than 16.

Find the maximum payoff that can occur.

The solution can be found below.

Week of October 22/07 - Solution

The payoff if $S_T > 16$ is $5(S_T - 12) + 3(S_T - 16) - c(S_T - K) = (8 - c)S_T + cK - 108$. The only way that this can be 0 for all $S_T > 16$ is if c = 8 and cK = 8K = 108 so that $K = \frac{108}{8} = 13.5$.

The maximum payoff occurs if $S_T = 13.5$. That payoff is 5(13.5 - 12) = 7.5.