Week6 Project
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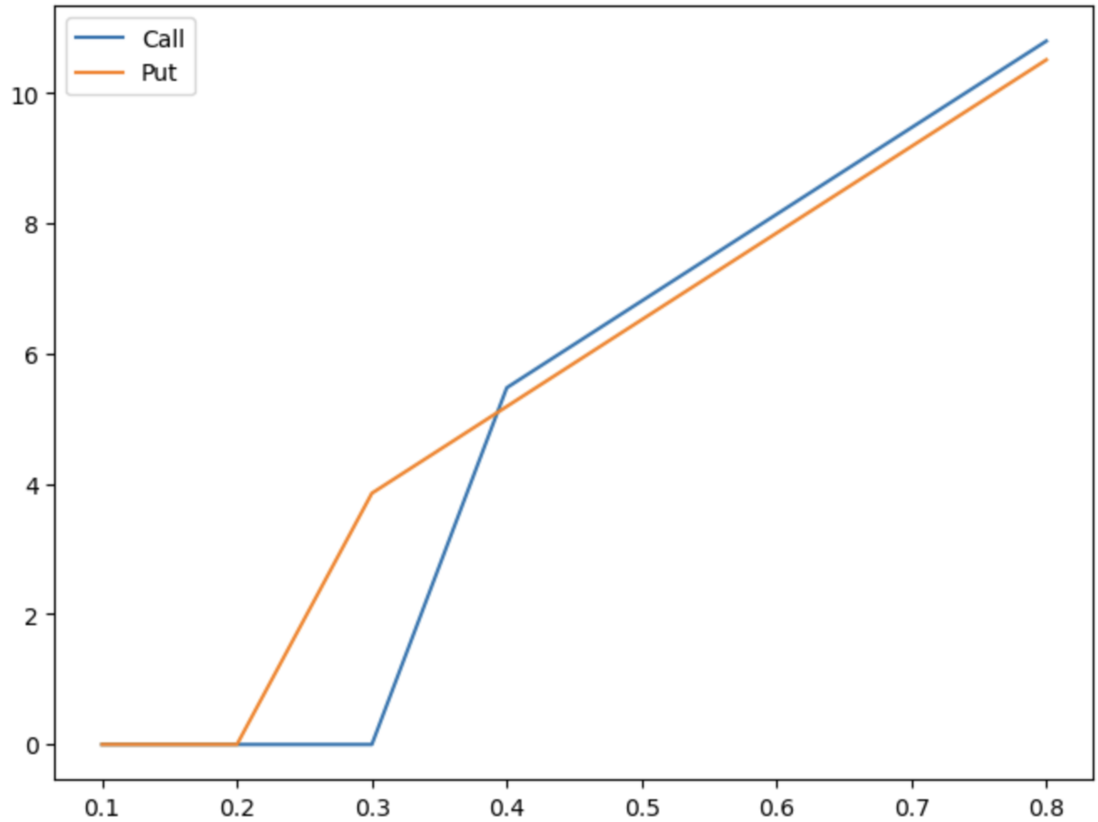
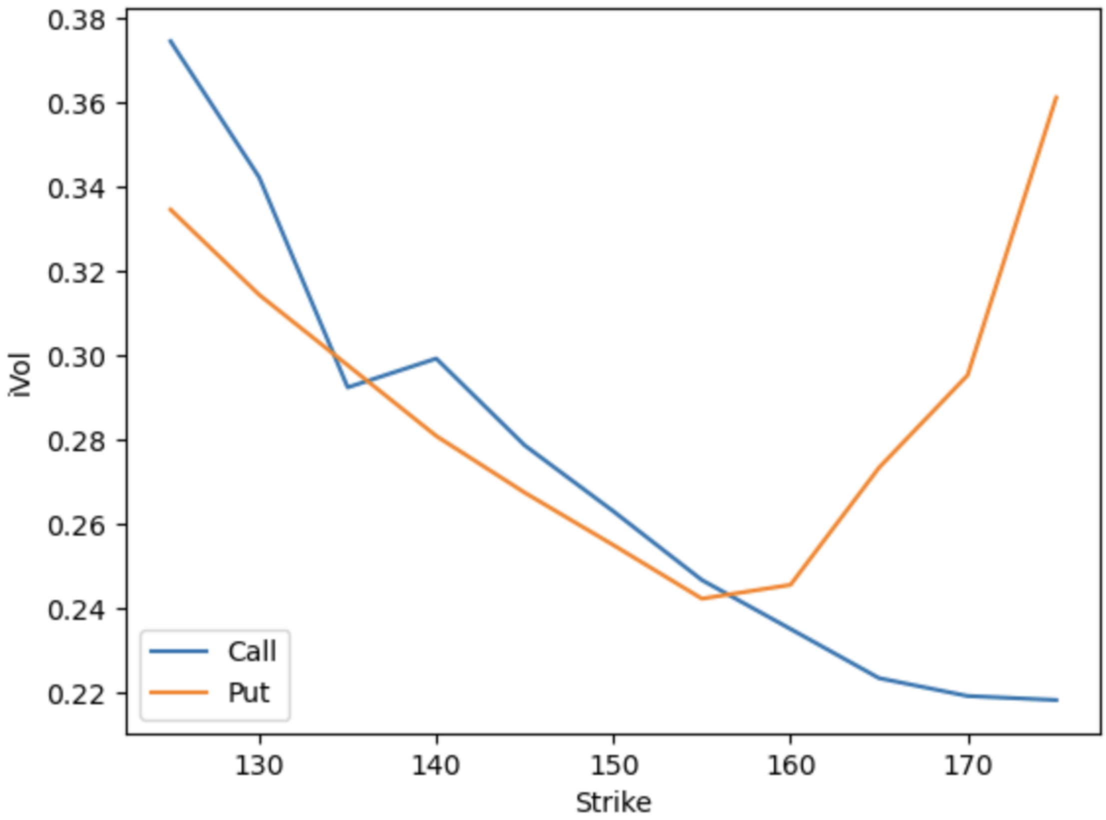
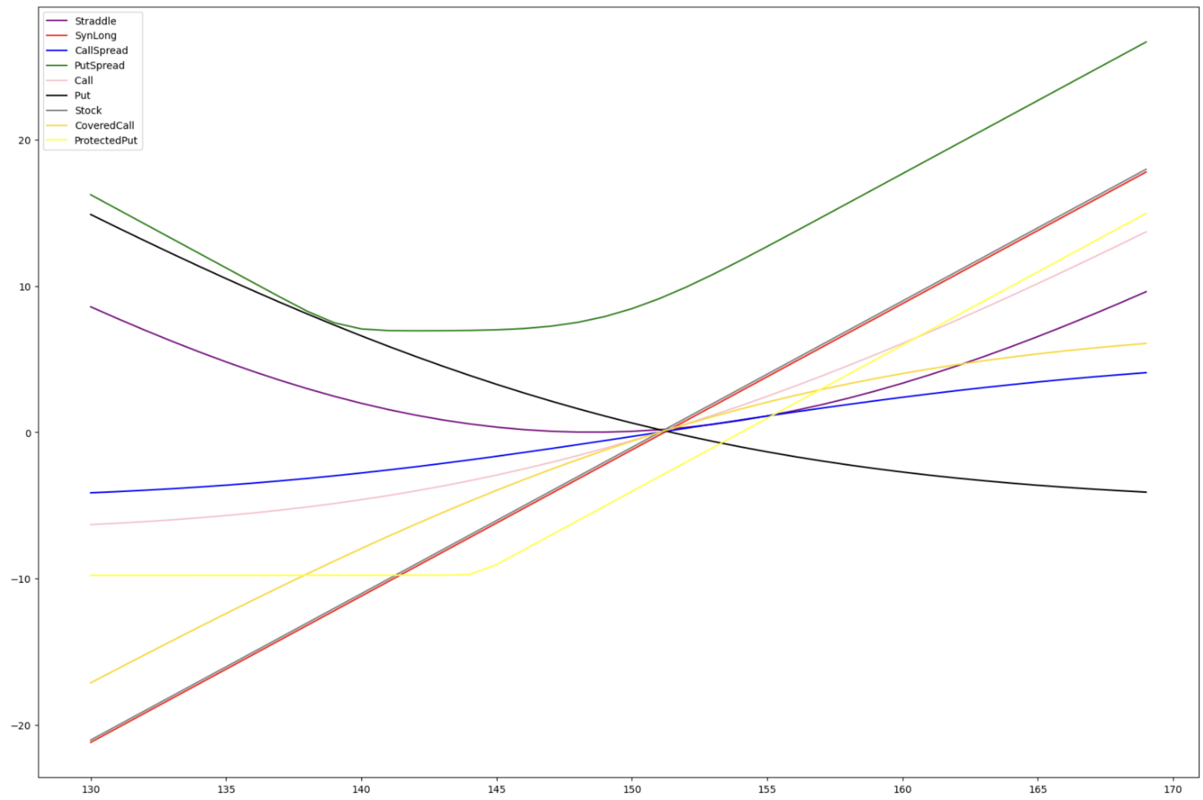
Q1
Using the current price as strike price, I plot option values under different implied volatility. As we can see, The lower the volatility, the closer the value is to zero. As the volatility increases, the value increases.



Q2
As we can see, the IVol curve for puts is like a volatility smile. But the curve for calls is not. The main reason implied can be that the market considers call options to be more stable than put options. This could mean that the market is more worried about the risk of puts or more optimistic about the risk of calls.


0.38
0.36
0.34
0.32
0.30
0.28
0.26
0.24
0.22
iVol
130
140
150
160
170
Strike
Call
Put

Q3


Straddle
SynLong
CallSpread
PutSpread
Call
Put
Stock
CoveredCall
ProtectedPut
20
10
0
−10
−20
130
135
140
145
150
155
160
165
170

(a) Straddle has the advantage of being able to invest in situations where market volatility is uncertain, as it is possible to profit from one of the options whether the market goes up or down.
(b) Synlong and the stock curve are very similar.
(c) The main advantage of call spread is the balance of protection and profitability in a bull market. Call spreads are less risky than buying call options, but also less profitable. The pink line floats more.
(d) Put spread is with limited downside, and risk is low and returns are relatively limited.
(e) Covered call enables the investor to gain some protection because the call option sold reduces the investor's potential loss.
(f) Protected put is like a mirror curve for put.