Problem Set 5

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1. Laguerre Polynomials

	K=2	K=3	K=4
T=0.5	1.585069	1.702291	1.723197
T=1	2.018832	2.169624	2.216167
T=2	2.485110	2.643543	2.750408

As we can see, when k increases, the estimate value increase, when maturity time increases, the price increases as well.

2. Hermite Polynomials

	K=2	K=3	K=4
T=0.5	1.572054	1.681312	1.726638
T=1	1.995157	2.120473	2.220375
T=2	2.448517	2.577618	2.729778

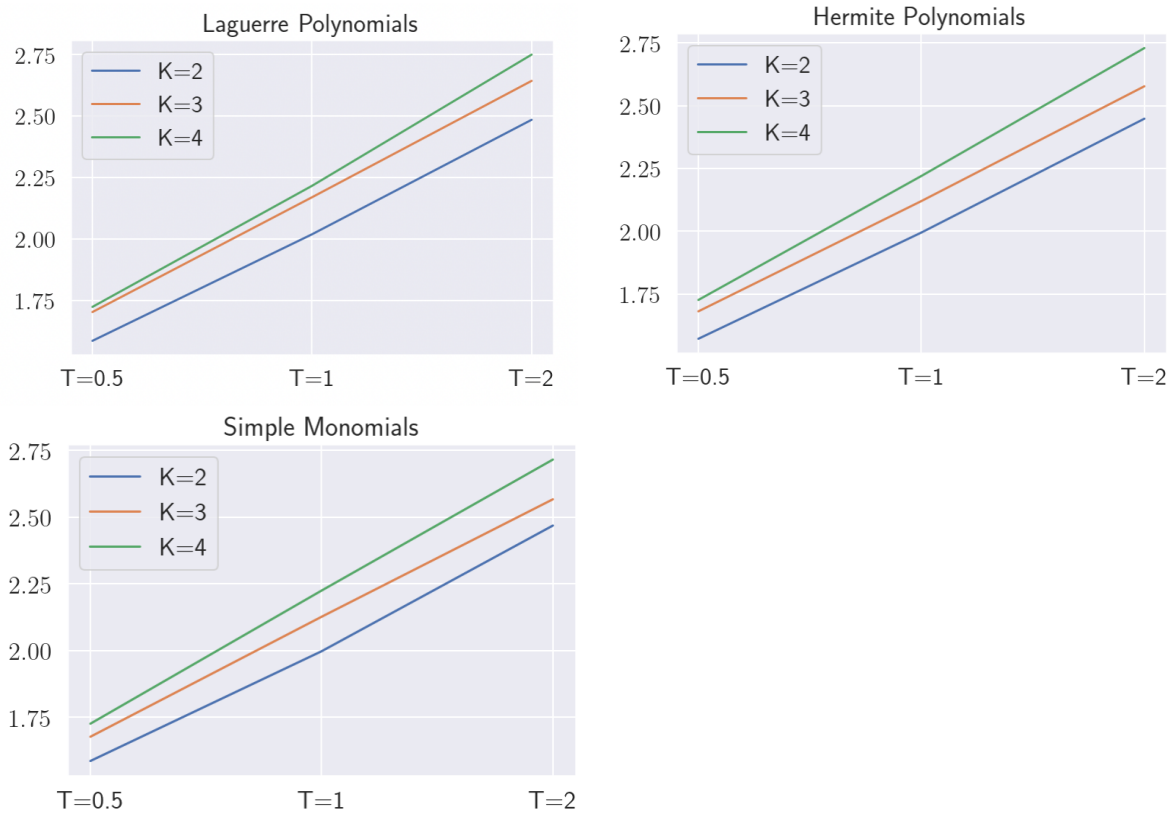
Like Laguerre polynomials, prices increase along with the maturity time and degree of k, and it seems that there is no big difference comparing the result to Laguerre polynomials.

3. Simple Polynomials

	K=2	K=3	K=4
T=0.5	1.586788	1.677614	1.726501
T=1	1.998103	2.127337	2.225514
T=2	2.469076	2.567499	2.716316

It shows the same pattern that prices increase along with the maturity time and degree of k.

4.



When we plot all the prices resulting from different polynomials methods, we really can not see big difference or discrepency among those method. However, it is obvious that the price of K=4 is constantly higher than K=3 and K=2.

In order to better compare those method, I also apply binomial method to calculate the prices that:

	Price
T=0.5	1.797425
T=1	2.320763
T=2	2.890038

Then we compare the prices and we see when the price of K=4 is the closest to the Binomial prices, thus we might propose that higher degree of K would be more precise in practice.