

# MA374 Lab 1 Report

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Q1)

The option values at  $t = 0$  for corresponding M values are :

M value	Call option value	Put option value
1	2.463367	1.816069
5	2.183245	1.535947
10	2.124835	1.477538
20	2.129583	1.482285
50	2.127215	1.479917
100	2.123667	1.476369
200	2.120209	1.472912
400	2.120065	1.472767

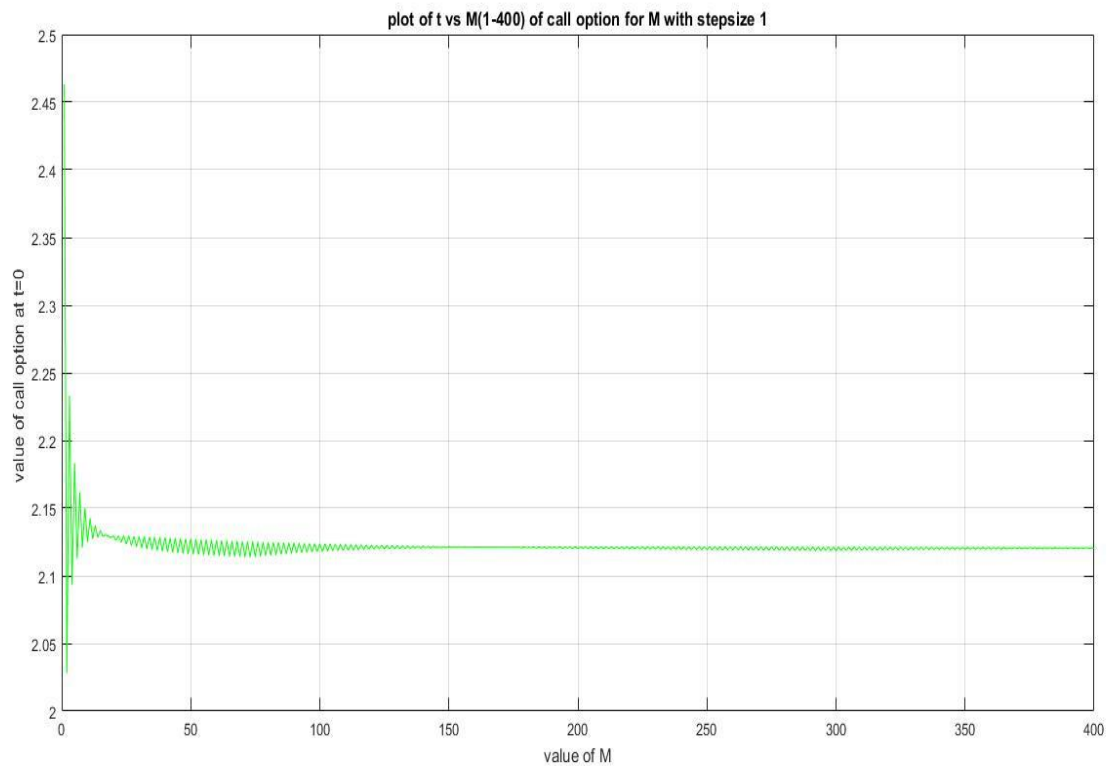
Q2)

As  $M$  increases, the value of the option decreases.

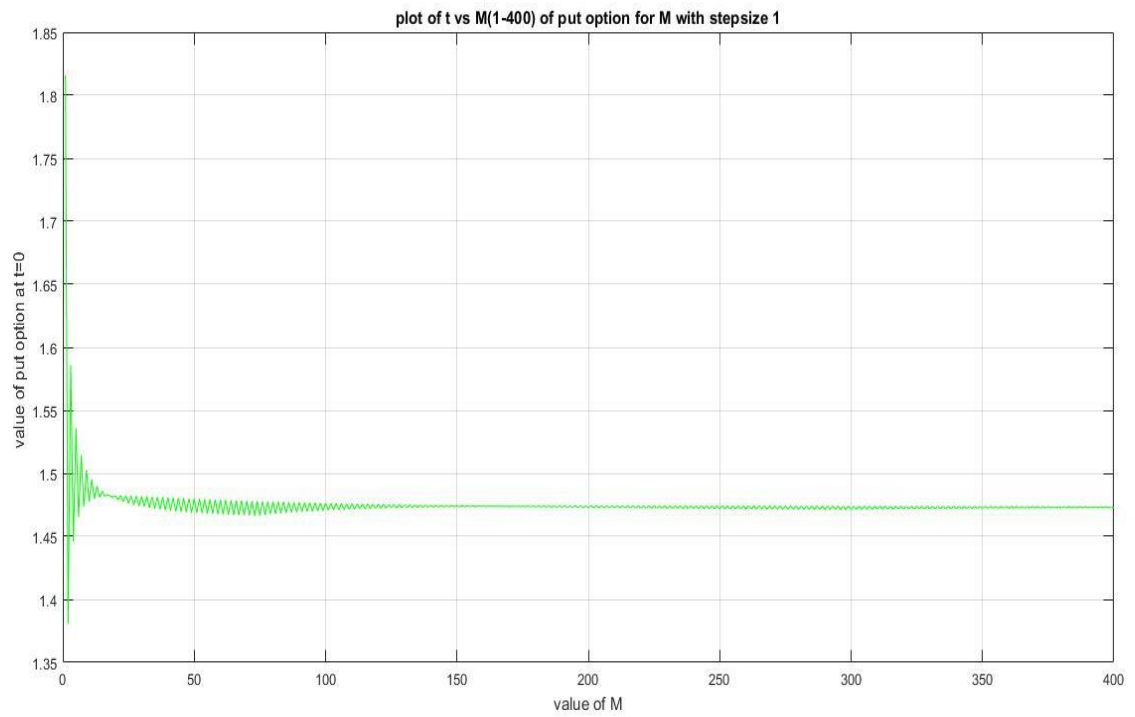
The value of call option is converging to 2.120065 as  $M$  increases from 1 to 400

The value of put option is converging to 1.472767 as  $M$  increases from 1 to 400

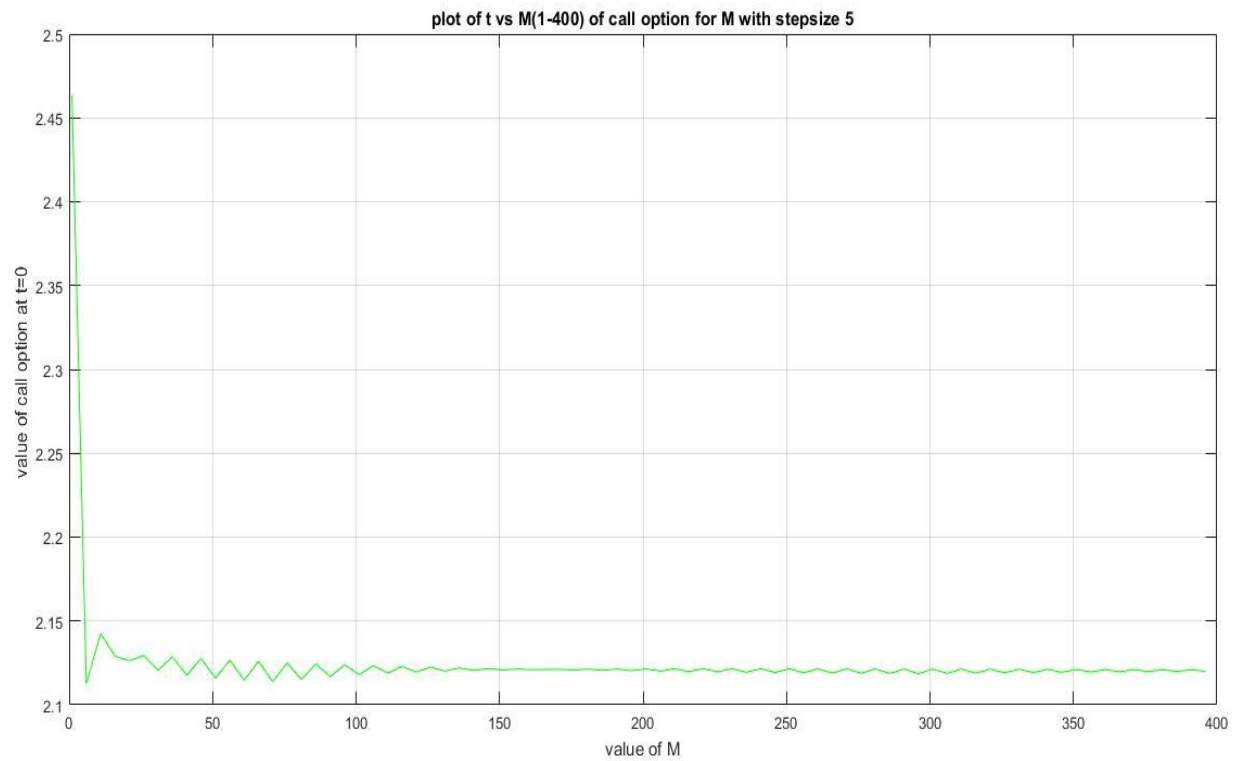
Plot of call option value at  $t = 0$  obtained by varying  $M$  through 1-400 in steps of 1 is



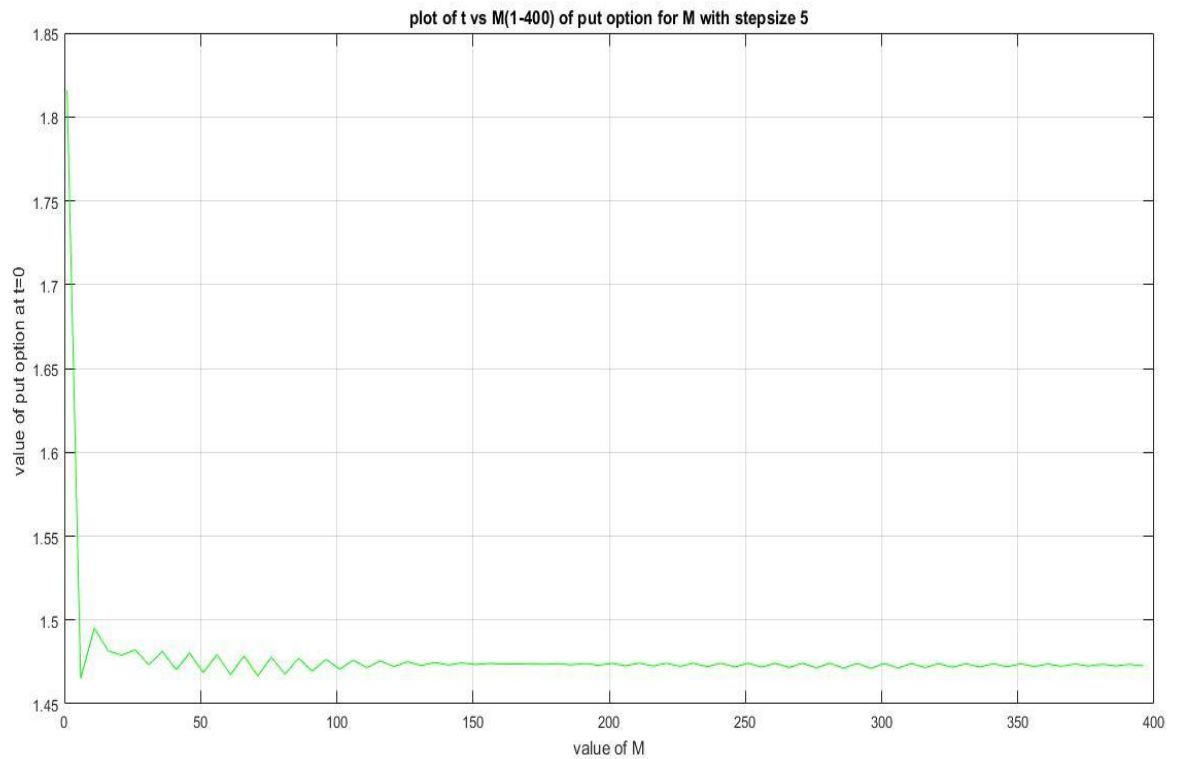
Plot of put option value at  $t = 0$  obtained by varying  $M$  through 1-400 in steps of 1 is



Plot of call option value at  $t = 0$  obtained by varying  $M$  through 1-400 in steps of 5 is



Plot of put option value at  $t = 0$  obtained by varying  $M$  through 1-400 in steps of 5 is



Q3)

Call option value at  $M = 20$  for various  $t$  values are

$t = 0$	$t = 0.3$	$t = 0.75$	$t = 1.50$	$t = 2.70$
2.1296	3.7248	7.7407	20.2796	66.0571
	1.9992	4.6752	14.1865	50.3233
	0.9492	2.5443	9.3937	37.8520
		1.2110	5.7170	27.9667
		0.4877	3.0718	20.1311

[illegible]

Put option value for M = 20 for various t values are

t = 0	t = 0.30	t = 0.75	t = 1.50	t = 2.70
1.4823	0.8236	0.2062	0.0005	0
	1.4630	0.5147	0.0075	0
	2.2877	1.0582	0.0498	0
		1.8448	0.2057	0
		2.8018	0.5983	0
		3.8059	1.3200	0
			2.3366	0
			3.4840	0
			4.5765	0.1438
			5.5074	0.9106
			6.2592	2.3929
				3.9333
				5.1543
				6.1221
				6.8892

				7.4972
				7.9792
				8.3612
				8.6641