A11.

A13

Alpha	CL	Cmle	Cmc4
-12	[-1.18548978]	[0.24999313]	[-0.03990287]
-10	[-0.94630934]	[0.19071149]	[-0.04227171]
-8	[-0.70597597]	[0.13000051]	[-0.04477585]
-6	[-0.46478248]	[0.06815599]	[-0.0474031]
-4	[-0.22302272]	[0.00547921]	[-0.05014065]
-2	[0.01900875]	[-0.05772447]	[-0.05297517]
0	[0.26101707]	[-0.12114712]	[-0.05589285]
2	[0.50270738]	[-0.18447976]	[-0.05887947]
4	[0.74378521]	[-0.24741384]	[-0.06192049]
6	[0.98395686]	[-0.30964274]	[-0.06500108]
8	[1.22292971]	[-0.3708633]	[-0.06810624]
10	[1.46041261]	[-0.43077725]	[-0.07122084]
12	[1.69611622]	[-0.48909271]	[-0.07432971]
14	[1.92975337]	[-0.54552556]	[-0.07741769]
16	[2.16103942]	[-0.59980086]	[-0.08046976]
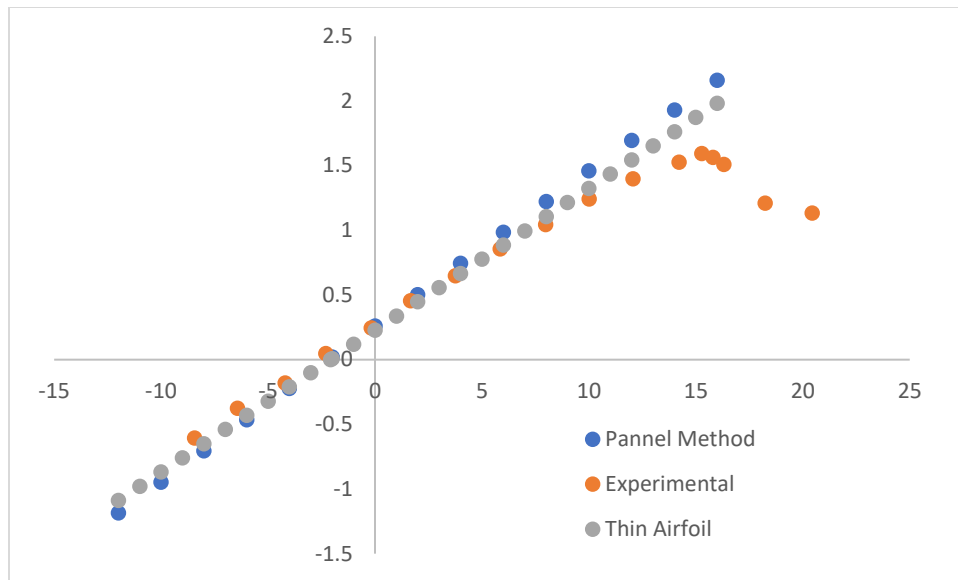
The results of the panel method match very closely to both the experimental results and the thin airfoil results.

A14

Alpha	CL	Cmle	Cmc4
-12	-1.261105535	0.285412266	-0.022974573
-10	-1.004998271	0.219257028	-0.028175494
-8	-0.74766657	0.151474091	-0.033623492
-6	-0.489423953	0.082393685	-0.039292024
-4	-0.230585049	0.012352364	-0.045153475
-2	0.028534788	-0.058308638	-0.051179287
0	0.28761986	-0.129245069	-0.057340104
2	0.546354511	-0.200111332	-0.06360591
4	0.804423514	-0.270562174	-0.06994618
6	1.06151245	-0.340254367	-0.076330023
8	1.317308097	-0.408848376	-0.082726339
10	1.571498807	-0.476010018	-0.089103966
12	1.823774888	-0.54141209	-0.095431832
14	2.07382898	-0.604735957	-0.101679108
16	2.32135643	-0.665673114	-0.107815359
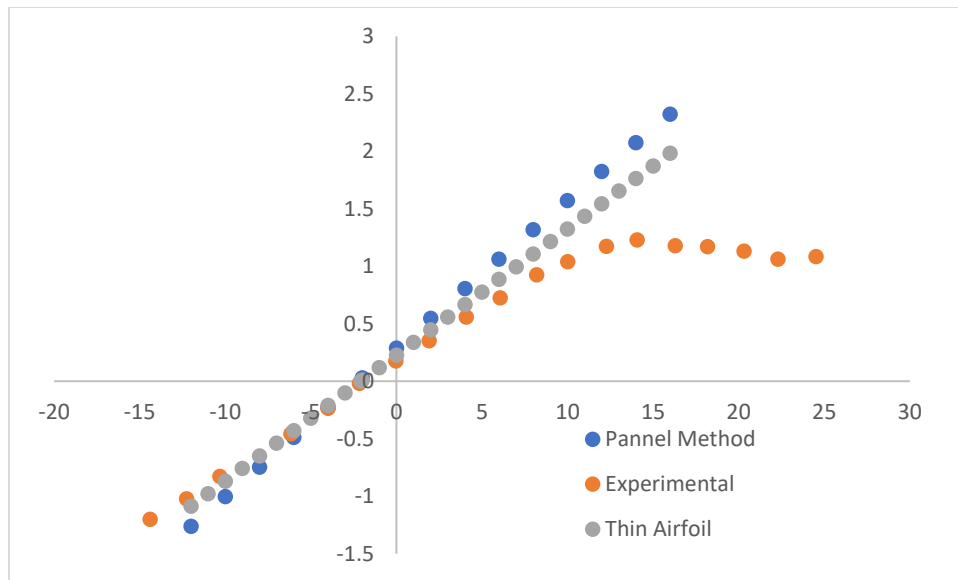
The panel method over predicts the lift coefficient for all Alphas. The method also produces linear results as it only predicts the pressure portion of the lift coefficient. The thicker airfoil results in a divergence in the solution around 8 degrees.
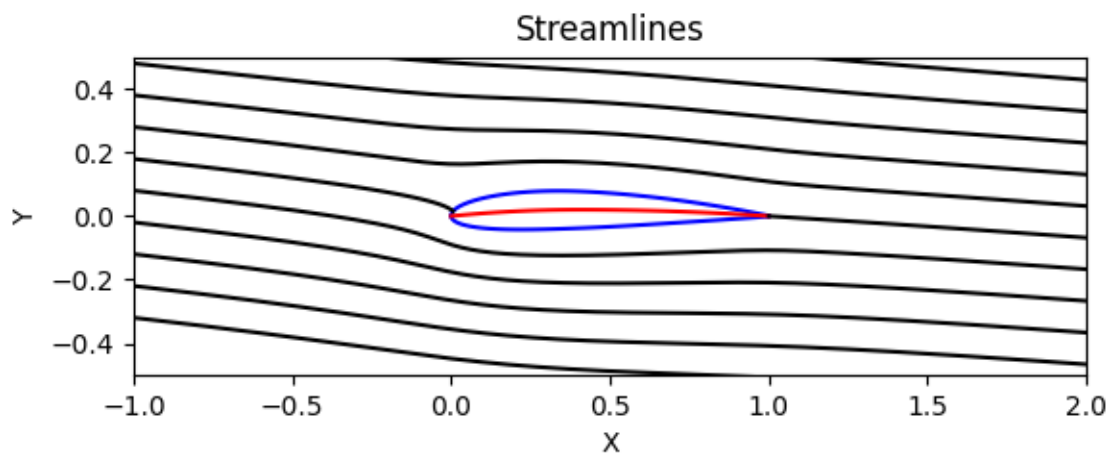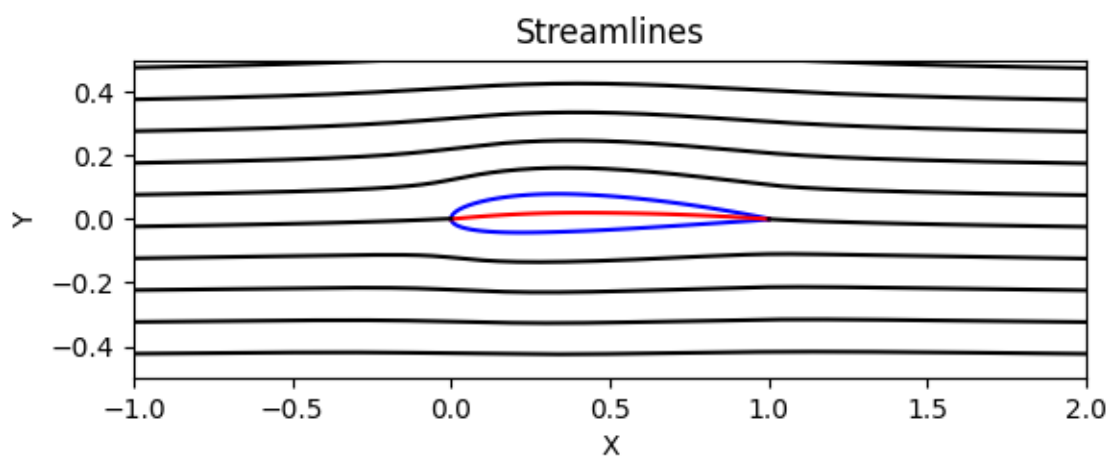
A15

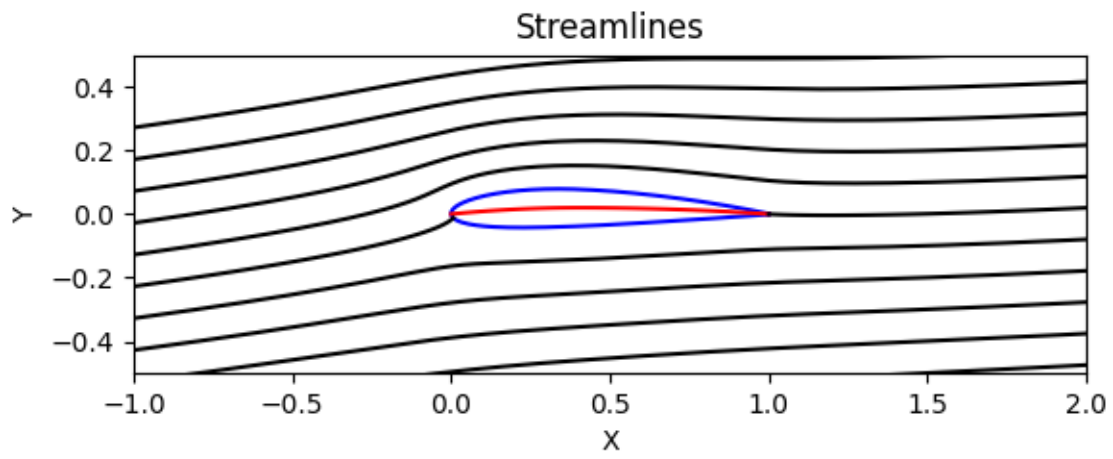| Alpha	CL	Cmle	Cmc4
-12	-1.474504547	0.383046264	0.022475493
-10	-1.231508563	0.322099177	0.018899382
-8	-0.987012175	0.259582856	0.015231196
-6	-0.741313265	0.195801873	0.011488804
-4	-0.494711179	0.131066963	0.007690441
-2	-0.247506364	0.065693507	0.00385461
0	1.69957E-14	2.98199E-15	7.23092E-15
2	0.247506364	-0.065693507	-0.00385461
4	0.494711179	-0.131066963	-0.007690441
6	0.741313265	-0.195801873	-0.011488804
8	0.987012175	-0.259582856	-0.015231196
10	1.231508563	-0.322099177	-0.018899382
12	1.474504547	-0.383046264	-0.022475493
14	1.715704075	-0.442127188	-0.025942105
16	1.954813282	-0.499054112	-0.02928233
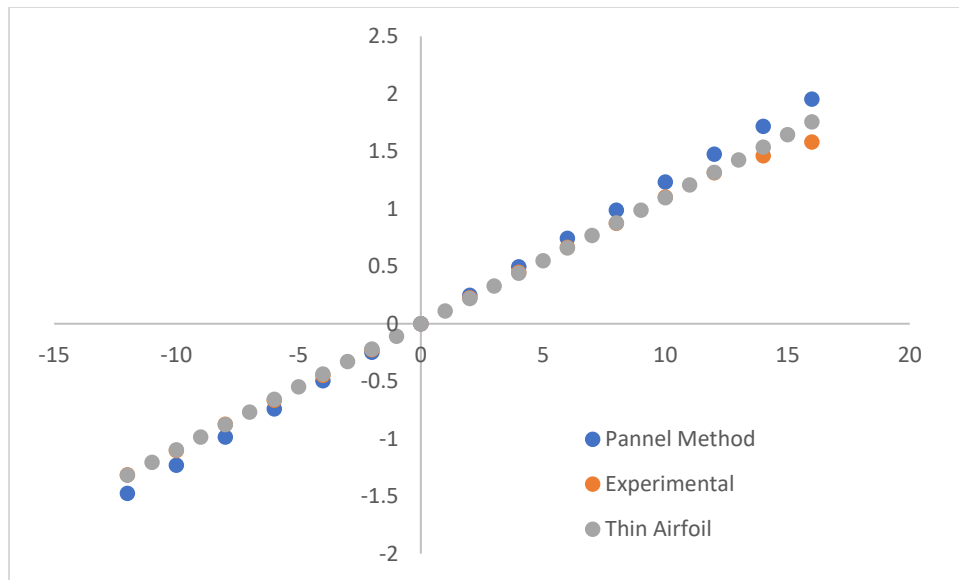
The panel method over predicts the lift coefficient at the extreme ends of the alpha range but between 5 and -5 the results are nearly identical.
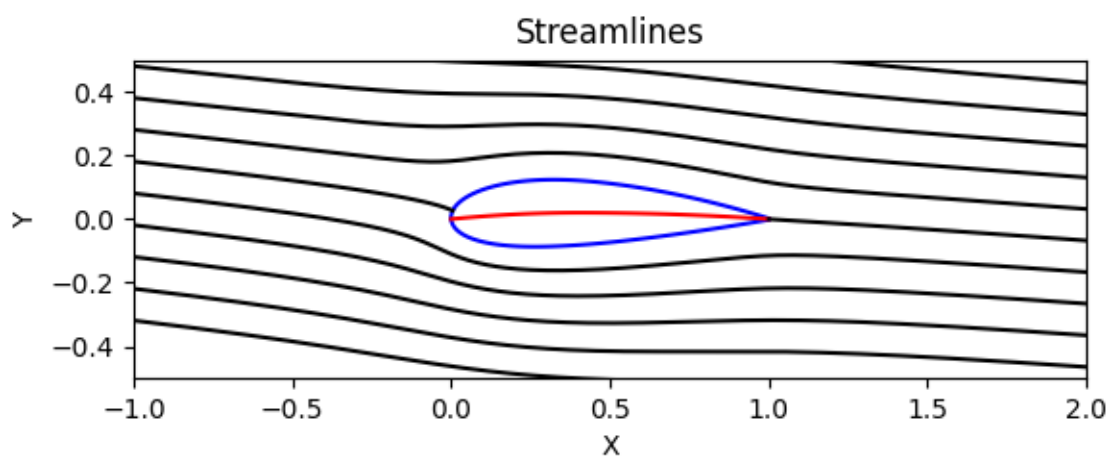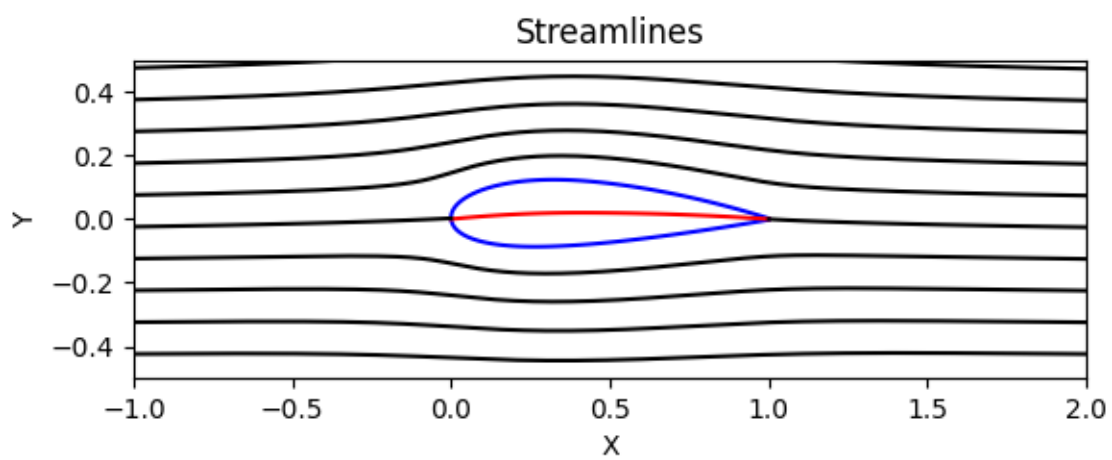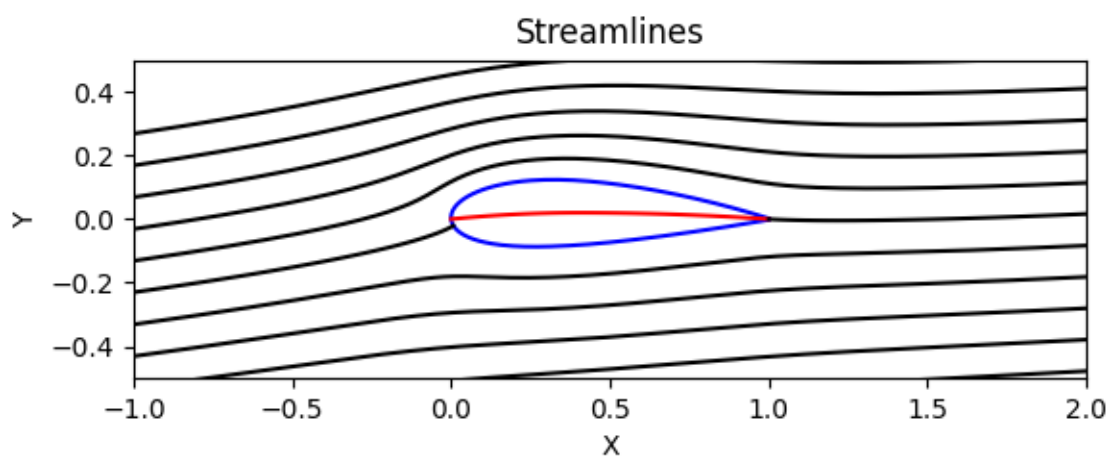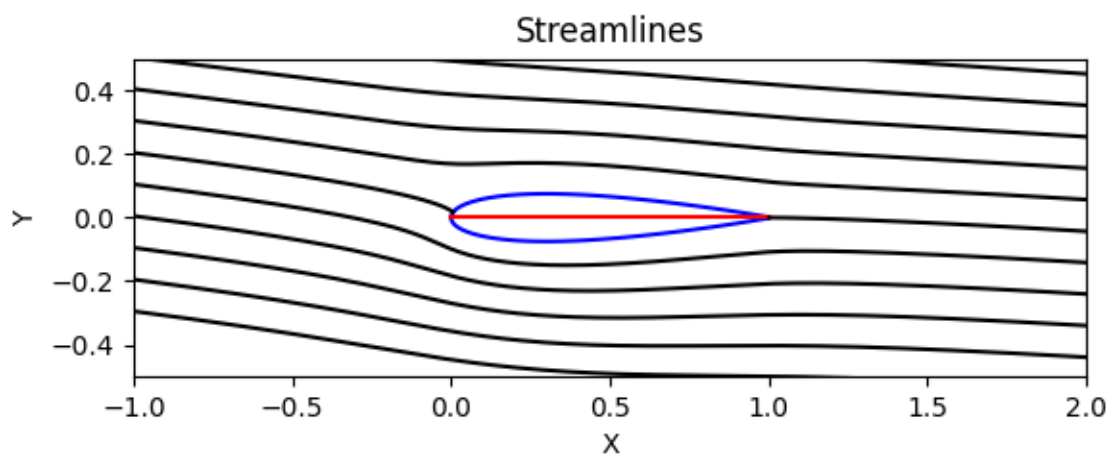
A17

Streamlines

Streamlines

A18

Streamlines

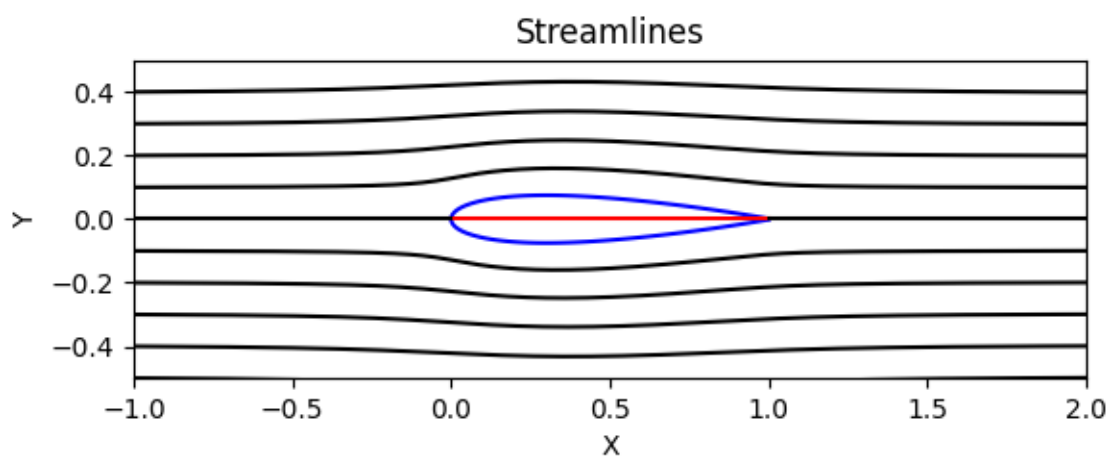Streamlines

Streamlines

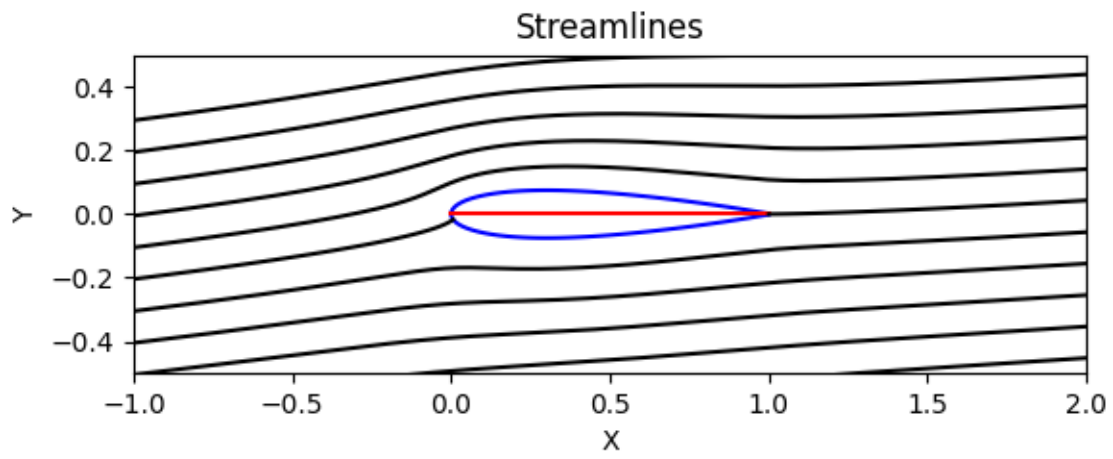Streamlines
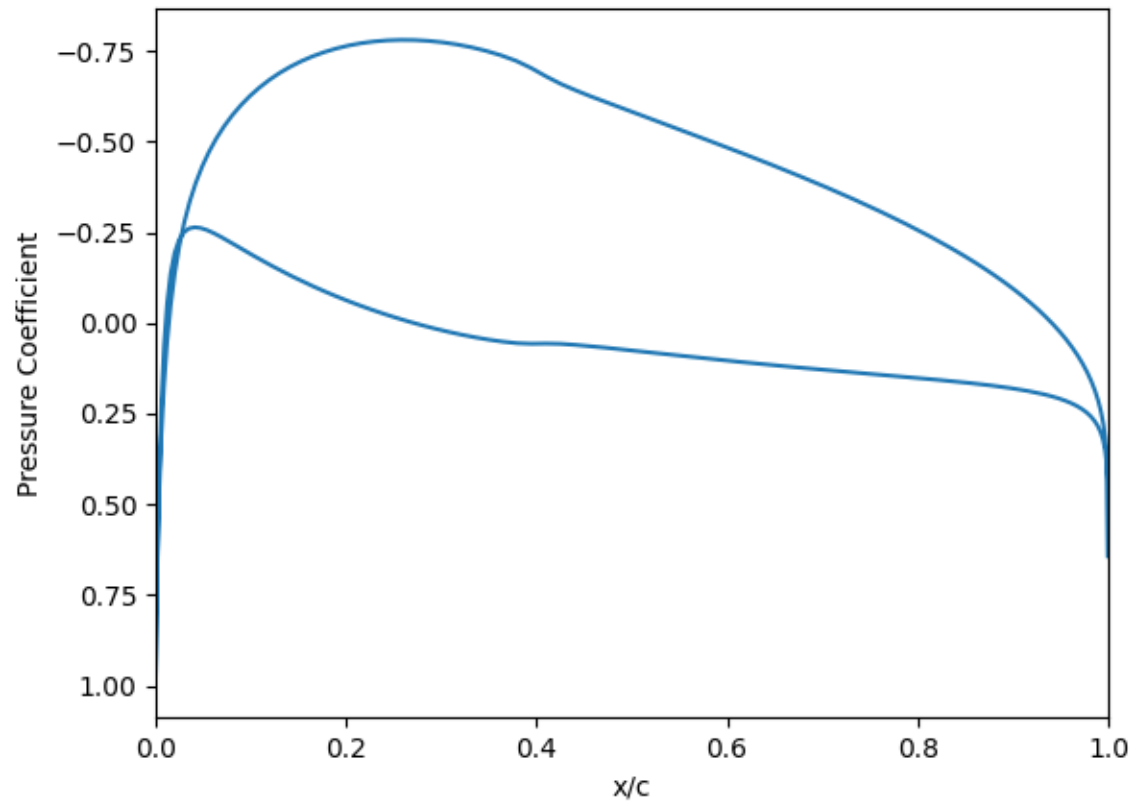
Streamlines

Streamlines

A20

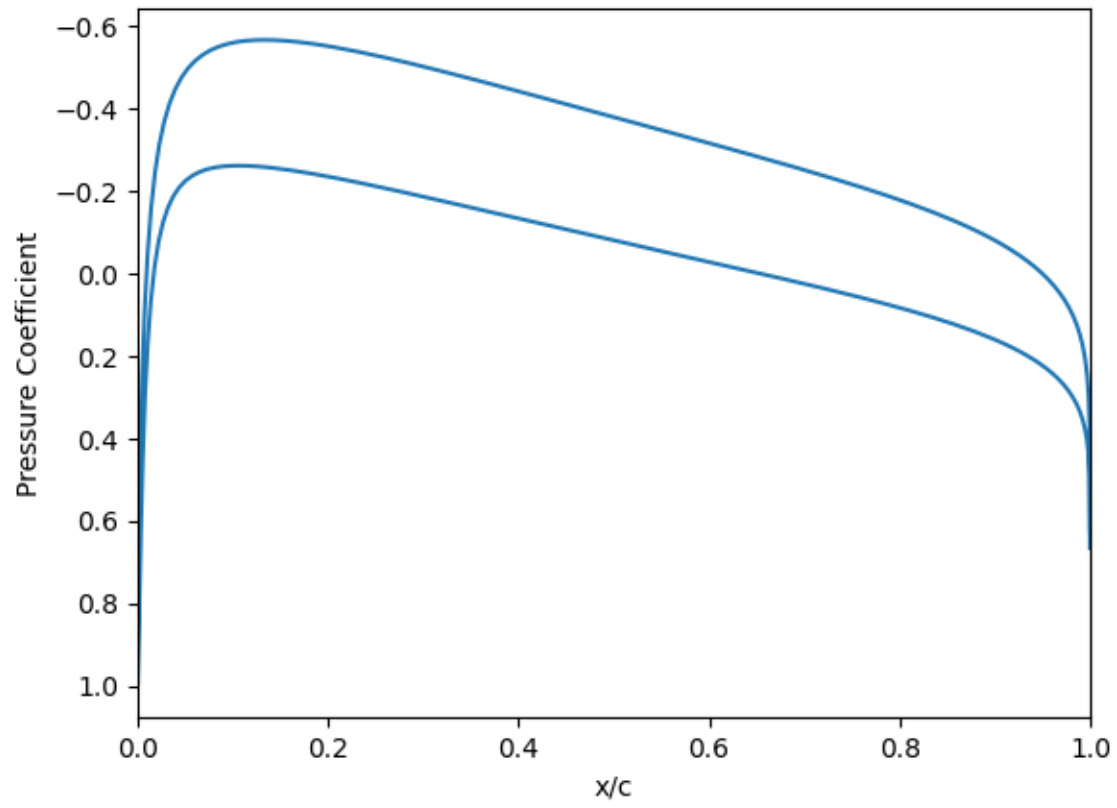(0.26101707101462923 - 0.2593304460916041)/ 0.26101707101462923 * 100 = 0.646174%

A23

CL = 0.51767425

A24

CL = 0.28267056

A25

CL=0.28267056