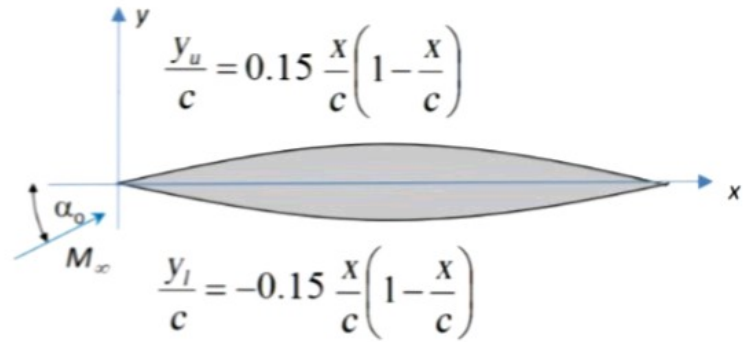


Biconvex Airfoil

Find C_L and C_D as functions of α_0
 Find C_{pu} and C_{pl} as functions of x and α_0



```
CASEID Biconvex Airfoil
DIM M
$FLTCON
NMACH=1.,
MACH=3.,
NALPHA=6.,
ALPHA=0.,1.,2.,3.,4.,5.$
$FINSET1
SECTYP=ARC,
SSPAN=0.,1.,
CHORD=1.,1.,
ZUPPER=0.0375,
NPANEL=1.,
PHIF=90.,$
NEXT CASE
```

$c = 1\text{m}$ (chord)
 $b = 1\text{m}$ (span)
 Mach_inf = 3
 P_inf = 101325 pa
 T_inf = 300 K
 $0 < \alpha < 5$ degree

```
***** FLIGHT CONDITIONS AND REFERENCE QUANTITIES *****
MACH NO = 3.00 REYNOLDS NO = 6.955E+07 /M
ALTITUDE = .0 M DYNAMIC PRESSURE = 638348.50 N/M**2
SIDESLIP = .00 DEG ROLL = .00 DEG
REF AREA = 1.000 M**2 MOMENT CENTER = .000 M
REF LENGTH = 1.00 M LAT REF LENGTH = 1.00 M
```

ALPHA	LONGITUDINAL			DERIVATIVES (PER DEGREE)	
	CN	CM	CA	CNA	CMA
.00	.000	.000	.010	.0225	-.0117
1.00	.023	-.012	.010	.0225	-.0117
2.00	.045	-.023	.010	.0226	-.0118
3.00	.068	-.035	.010	.0228	-.0118
4.00	.091	-.047	.010	.0230	-.0119
5.00	.114	-.059	.010	.0232	-.0121

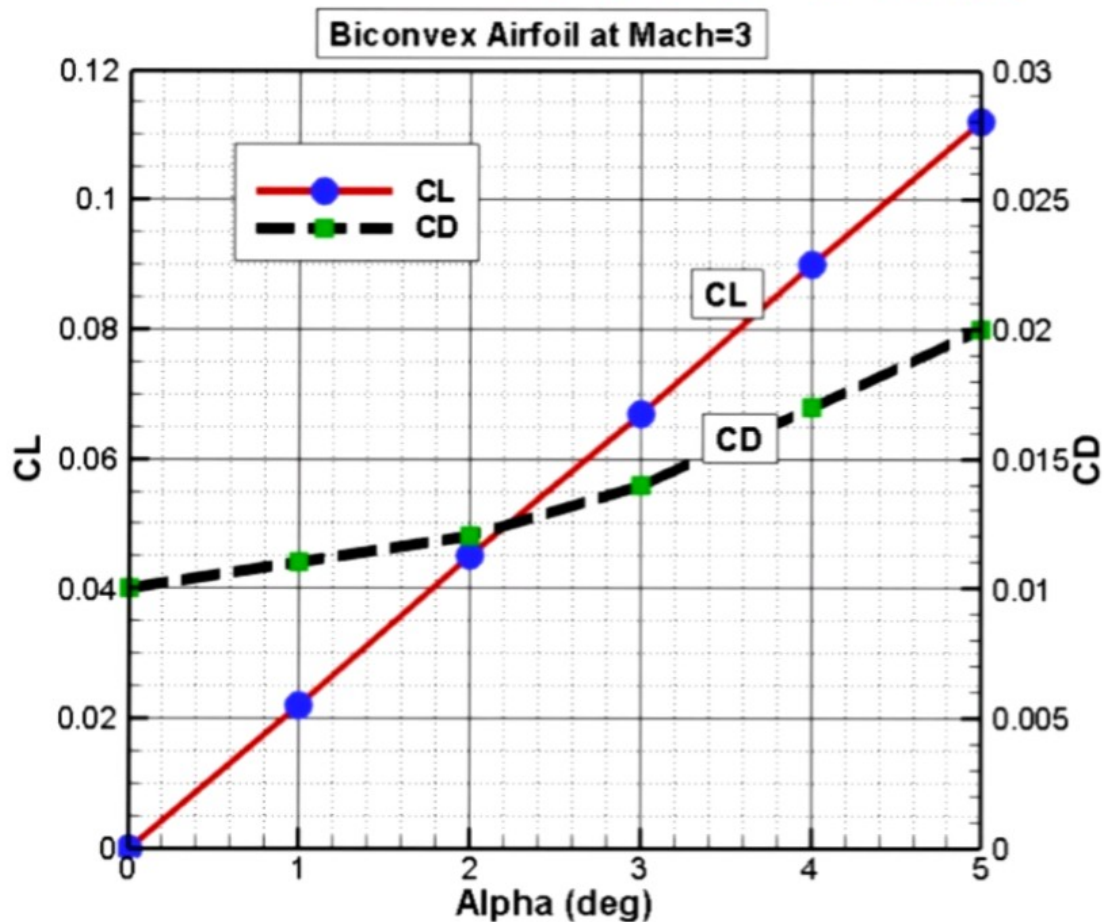
ALPHA	CL	CD	CL/CD	X-C.P.
.00	.000	.010	.000	-.520
1.00	.022	.011	2.099	-.520
2.00	.045	.012	3.785	-.520
3.00	.067	.014	4.877	-.520
4.00	.090	.017	5.430	-.520
5.00	.112	.020	5.598	-.520

Tecplot Input File:

```
variables=ALPHA,CL,CD,CL/CD,XCP
0.00 .000 .010 .000 -.520
1.00 .022 .011 2.099 -.520
2.00 .045 .012 3.785 -.520
3.00 .067 .014 4.877 -.520
4.00 .090 .017 5.430 -.520
5.00 .112 .020 5.598 -.520
```

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3-9 استفاده از نرم افزار تکپلات برای ترسیم نمودارها

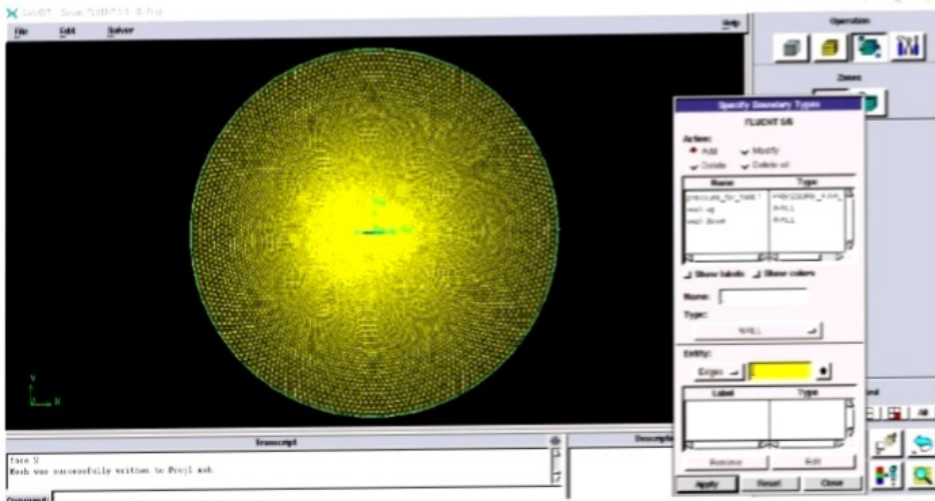
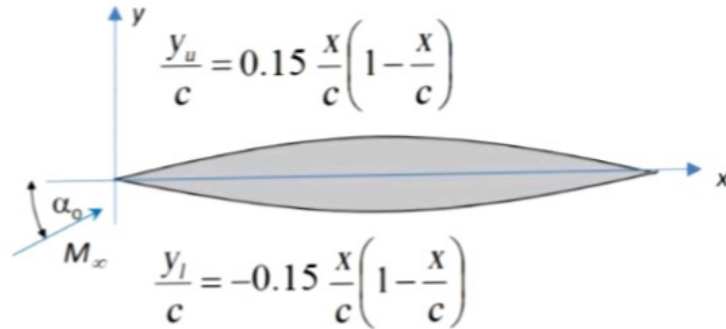


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9-4 آشنایی با کمیت و فلونت (حل پروژه اول درس به روش عددی)

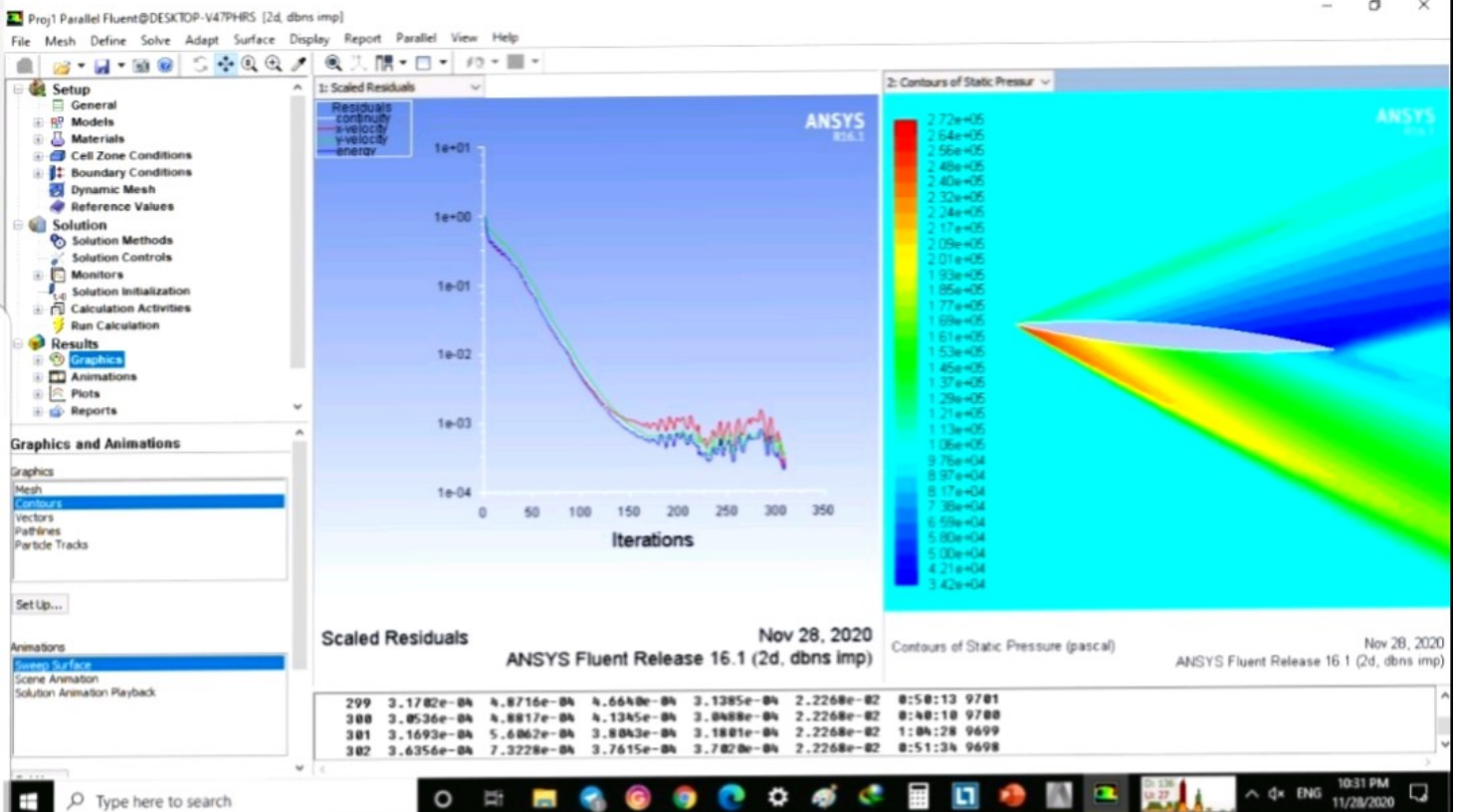
Biconvex Airfoil

Find C_L and C_D as functions of α_0
 Find C_{pu} and C_{pl} as functions of x and α_0



$c = 1\text{m}$ (chord)
 $b = 1\text{m}$ (span)
 $Mach_{inf} = 3$
 $P_{inf} = 101325\text{ pa}$
 $T_{inf} = 300\text{ K}$
 $0 < \alpha < 5\text{ degree}$

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