

GOJKO MAGAZINVIĆ

KONSTRUIRANJE POMOĆU RAČUNALA

Uvod u predmet

Zavod za strojarstvo i brodogradnju

Fakultet elektrotehnike, strojarstva i brodogradnje
Sveučilište u Splitu



Ciljevi

- ❑ Razumjeti temeljna načela konstruiranja pomoću računala primjenom tehnologije geometrijskoga modeliranja
 - ❑ Steći temeljne vještine geometrijskoga modeliranja jednostavnih modela primjenom programa *Creo Parametric 3.0*
 - ❑ Naučiti izvršavati jednostavne proračune proračunskim tablicama primjenom programa *Microsoft Excel*
 - ❑ Naučiti grafički prikazivati rezultate proračuna primjenom proračunskih tablica
 - ❑ Naučiti izvršavati naprednije proračune (numerička integracija, rješavanje jednadžbi i sustava jednadžbi) primjenom proračunskih tablica
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Osoblje

Predavanja:

prof. dr. sc. Gojko Magazinović, vanjski suradnik

ePošta: gmag@fesb.hr

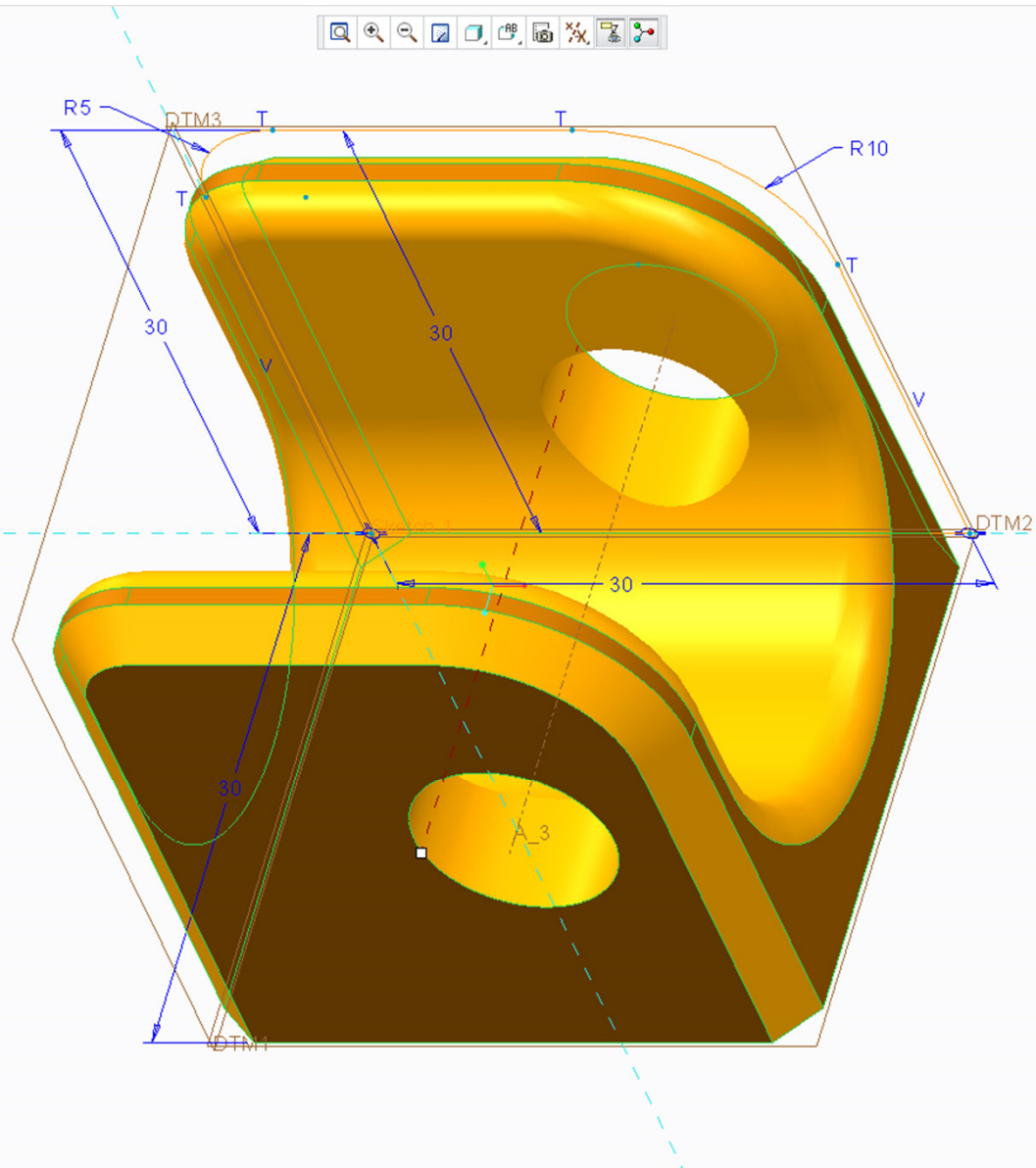
Soba: C617

Tel. 021 305 977

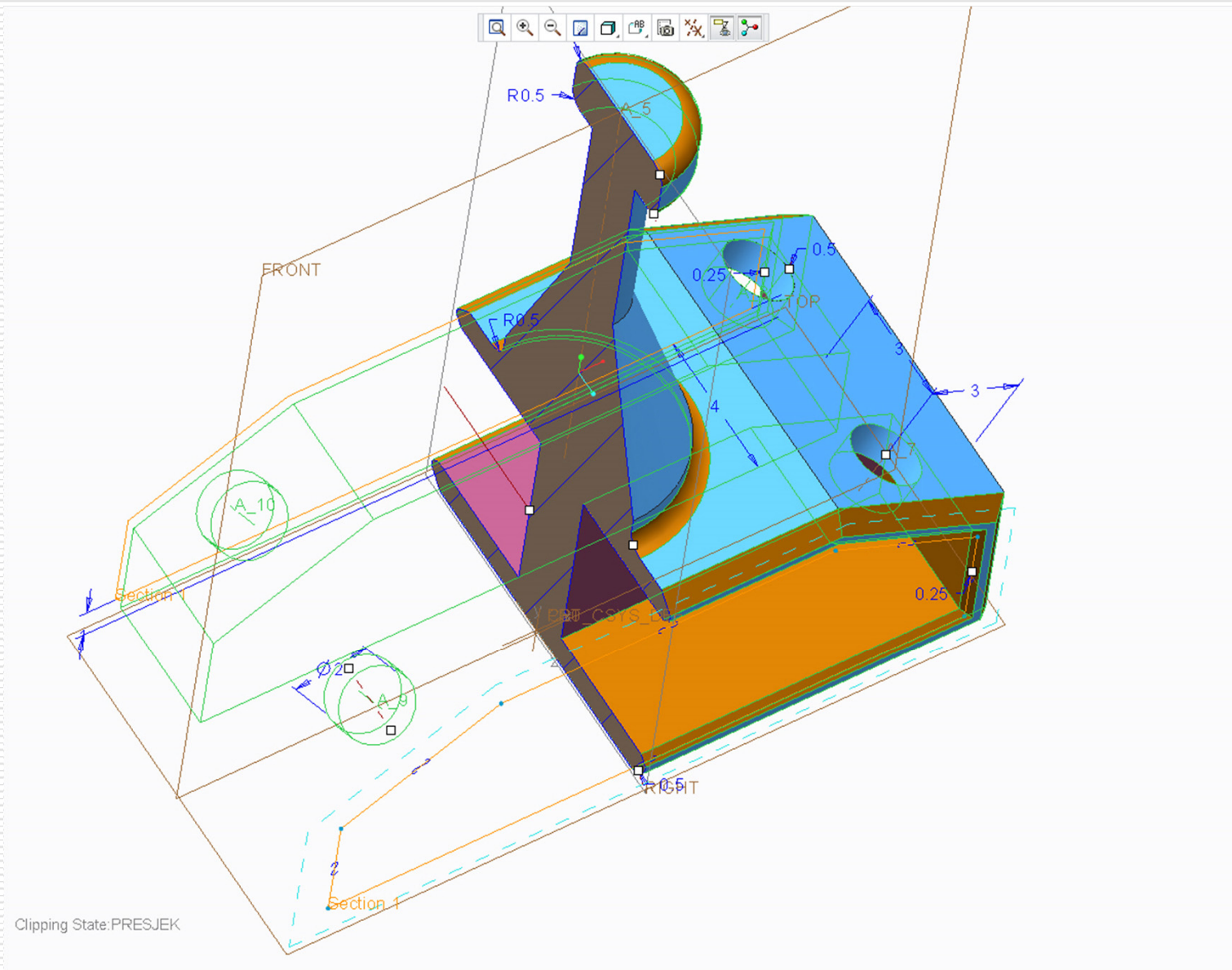
Vježbe:

Predmetni nastavnik

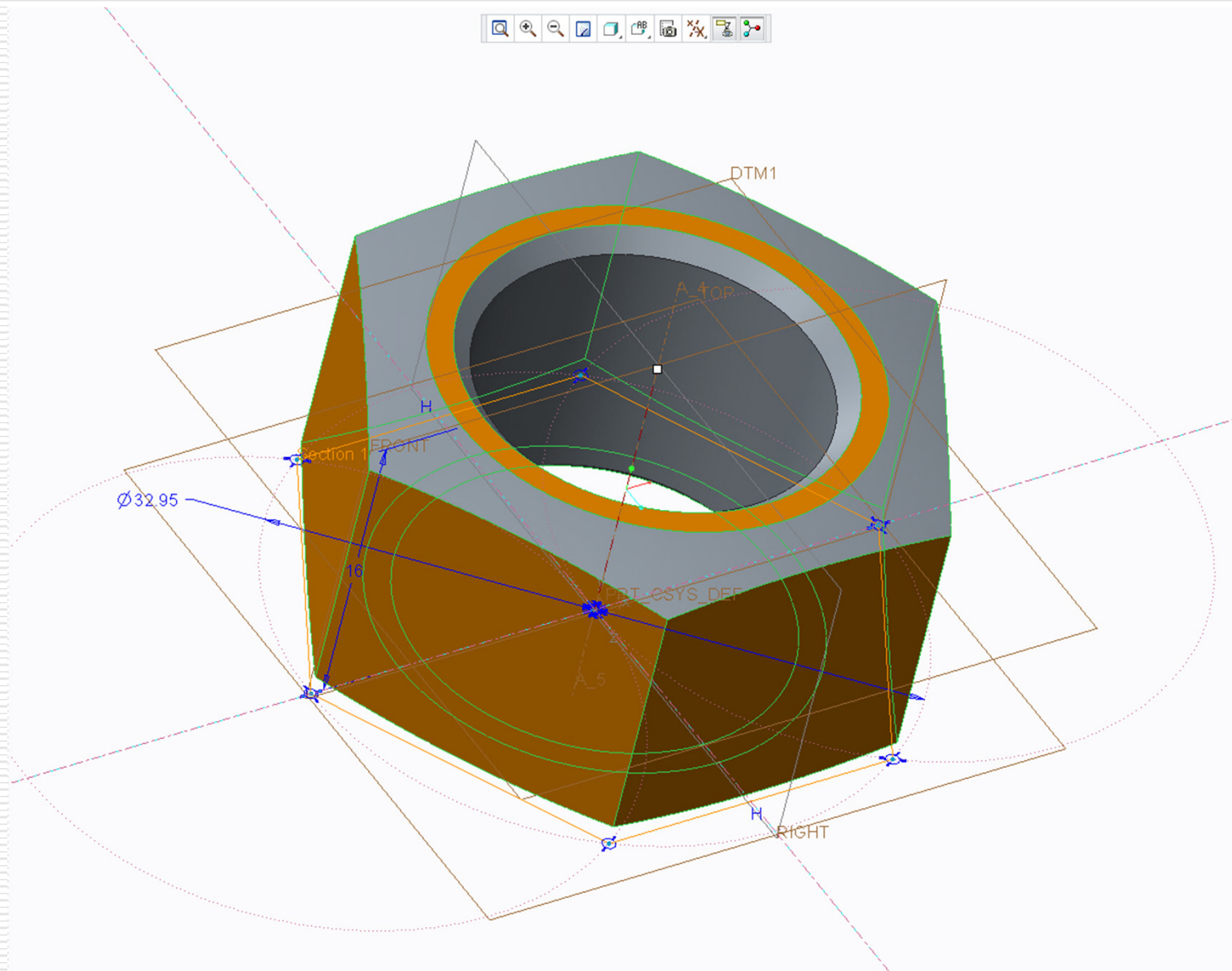
Geometrijsko modeliranje – tvorba modela



Geometrijsko modeliranje – presjek modela



Geometrijsko modeliranje – konstrukcija modela



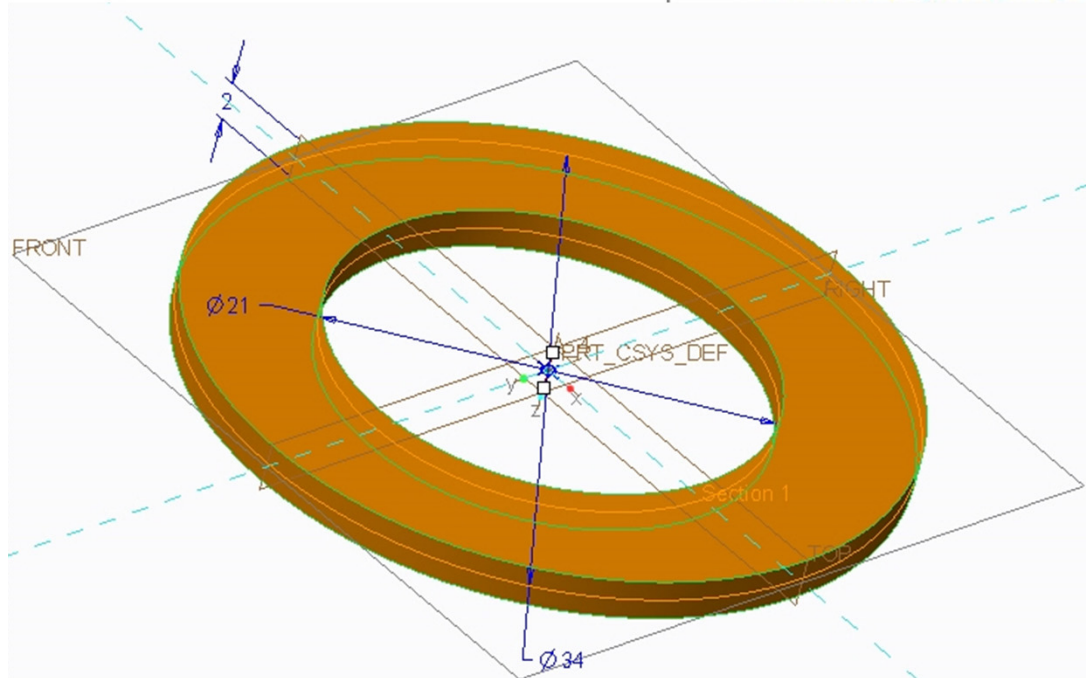
Razmjena podataka – neutralni zapis

podloska_21mm

```
1 ISO-10303-21;  
2 HEADER;  
3 FILE_DESCRIPTION('', '2;1');  
4 FILE_NAME('PODLOSKA_21MM', '2013-12-02T', (
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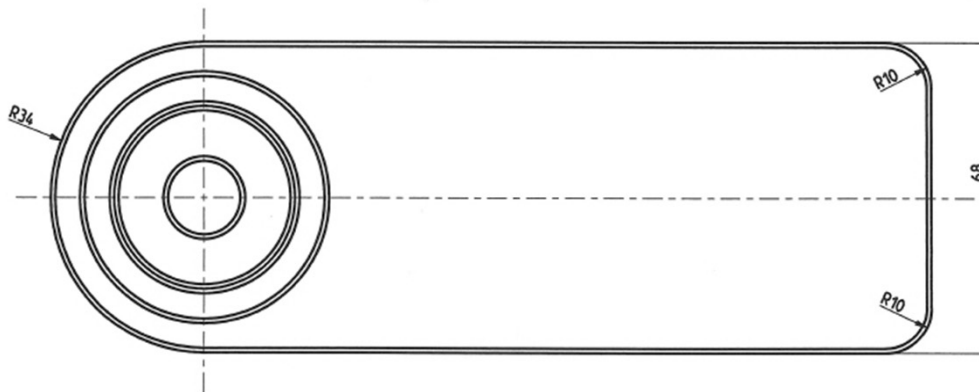
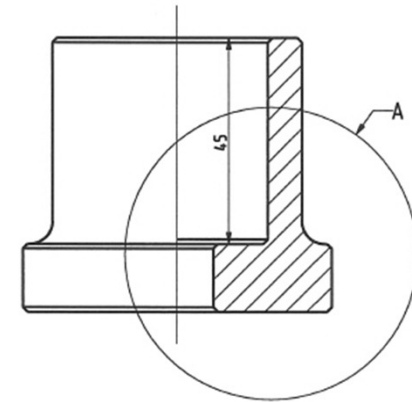
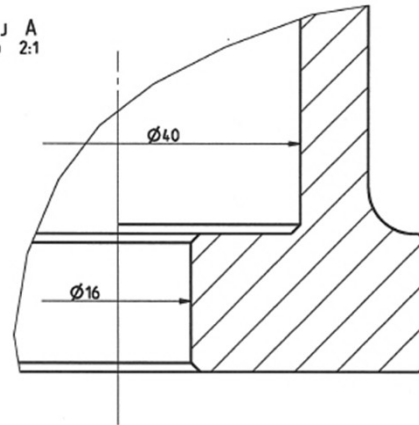
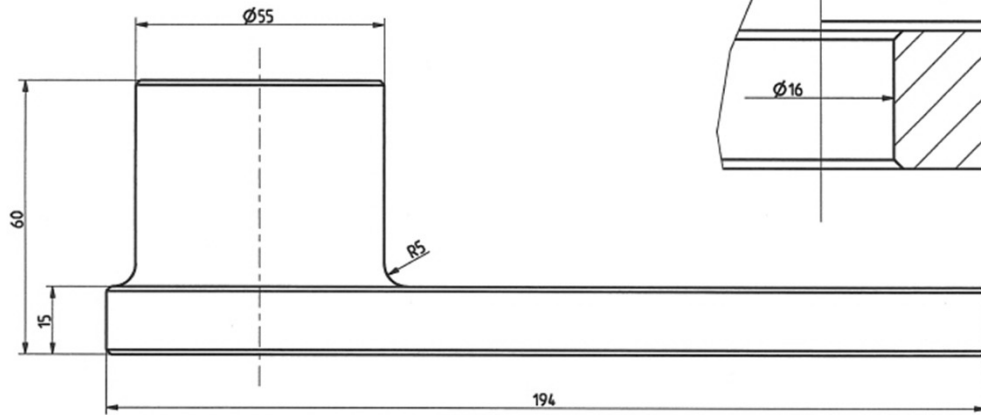
```
ER BY PARAMETRIC TECHNOLOGY CO  
ER BY PARAMETRIC TECHNOLOGY CO  
('CONFIG_CONTROL_DESIGN'));  
  
_POINT('', (0.E0, 0.E0, -1.E0));  
_POINT('', (0.E0, 0.E0, -1.E0));  
_POINT('', (1.E0, 0.E0, 0.E0));  
ACEMENT_3D('', #2, #3, #4);  
_POINT('', (0.E0, 0.E0, -1.E0));  
_POINT('', (0.E0, 0.E0, -1.E0));  
_POINT('', (-1.E0, 0.E0, 0.E0));  
ACEMENT_3D('', #7, #8, #9);
```

```
18 #12=CARTESIAN_POINT('', (0.E0, 0.E0, -1.E0))  
19 #13=DIRECTION('', (0.E0, 0.E0, 1.E0));  
20 #14=DIRECTION('', (1.E0, 0.E0, 0.E0));  
21 #15=AXIS2_PLACEMENT_3D('', #12, #13, #14);  
22 #17=CARTESIAN_POINT('', (0.E0, 0.E0, -1.E0))
```



Jednostavni nacrt

DETALJ A
Mjerilo 2:1



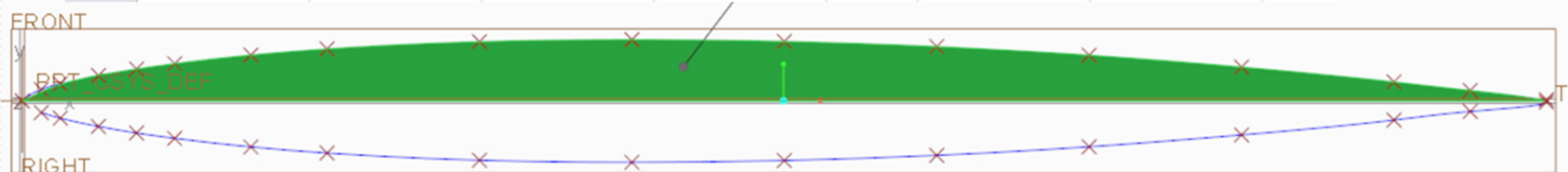
Napomena:
Sve oštre rubove skositi s 1/45°

Datum	Ime i prezime	Polpis	Sveučiliste u Splitu FESB, Split	
Projektirao 10-05-29	GMag			
Razradio 10-05-29	GMag			
Crtao 10-05-29	GMag			
Pregledao 10-05-29				
Objekt: Kolokvij		Objekt broj: 1		Primjerak
		R.N. broj: 1		
Napomena:				
Materijal: SL 14		Masa: 1.839		
Naziv: Zadatak_1			Pozicija: 1	Format: A3
Mjerilo: 1:1			Listova: 1	
Crtez broj: 1			List: 1	

0 10 20 30 40 50 60 70 80 90 100

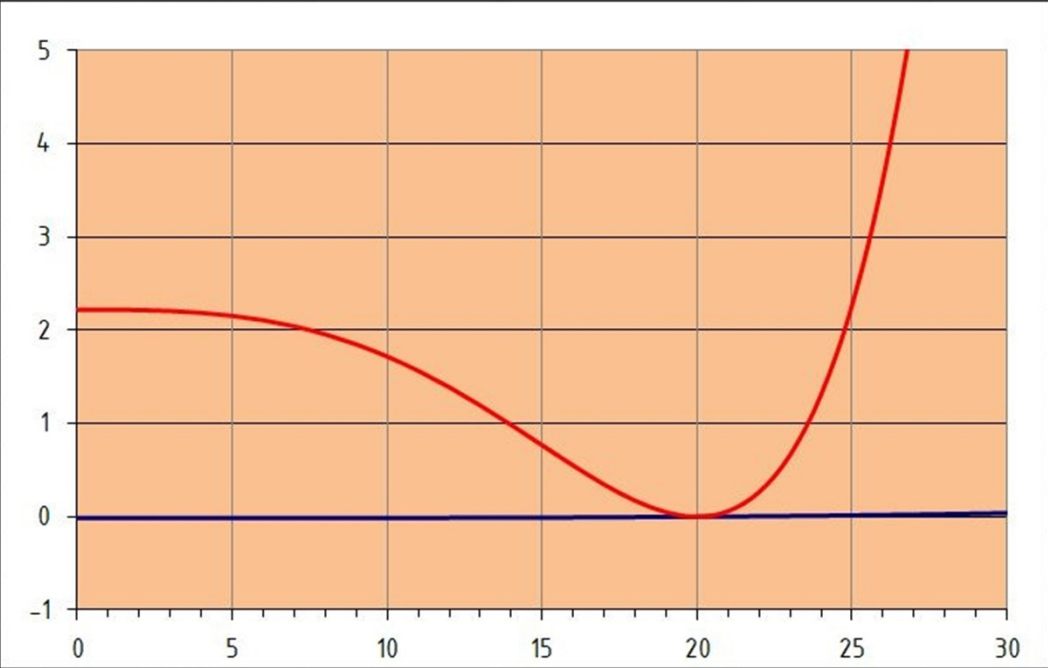
Proračunske tablice – numerička integracija

	A	B	C	D	E	F	G
1							
2	Površina numeričkom integracijom					Točno =	0.0281
3							
4			Trapezno pravilo			Simpsonovo pravilo	
5	x	y	kT	kT*y		kS	kS*y
6	1	0.0008	1	0.0008		1	0.0008
7	0.9	0.01244	2	0.0249		4	0.0498
8	0.8	0.02213	2	0.0443		2	0.0443
9	0.7	0.02987	2	0.0597		4	0.1195
10	0.6	0.03547	2	0.0709		2	0.0709
11	0.5	0.03884	2	0.0777		4	0.1554
12	0.4	0.04	2	0.0800		2	0.0800
13	0.3	0.03867	2	0.0773		4	0.1547
14	0.2	0.03396	2	0.0679		2	0.0679
15	0.1	0.02436	2	0.0487		4	0.0974
16	0	0	1	0.0000		1	0.0000
17							
18			AT =	0.0276		AS =	0.0280
19							
20			Greška =	-1.73%			-0.28%



Proračunske tablice – rješavanje jednadžbi

RJEŠAVANJE JEDNADŽBE EVOLVENTE				
α	α/rad	$F(\alpha)$	$F^2(\alpha)$	
3	0	0.000	-0.015	2.221292160000
4	1	0.017	-0.015	2.220763871956
5	2	0.035	-0.015	
6	3	0.052	-0.015	
7	4	0.070	-0.015	
8	5	0.087	-0.015	
9	6	0.105	-0.015	
10	7	0.122	-0.014	
11	8	0.140	-0.014	
12	9	0.157	-0.014	
13	10	0.175	-0.013	
14	11	0.192	-0.013	
15	12	0.209	-0.012	
16	13	0.227	-0.011	
17	14	0.244	-0.010	
18	15	0.262	-0.009	
19	16	0.279	-0.007	
20	17	0.297	-0.006	0.345660671354
21	18	0.314	-0.004	0.171691651025
22	19	0.332	-0.002	0.047914784148
23	20	0.349	0.000	0.000000001474
24	21	0.367	0.002	0.059579543249
25	22	0.384	0.005	0.265203411269
26	23	0.401	0.008	0.663121626151



$\alpha =$	30 °
$F(\alpha) =$	0.038847
$F^2(\alpha) =$	0.001509

Sretno!

