3.4.13 $N = 41$, $d = \lambda/2$, $SL = -30\,dB$

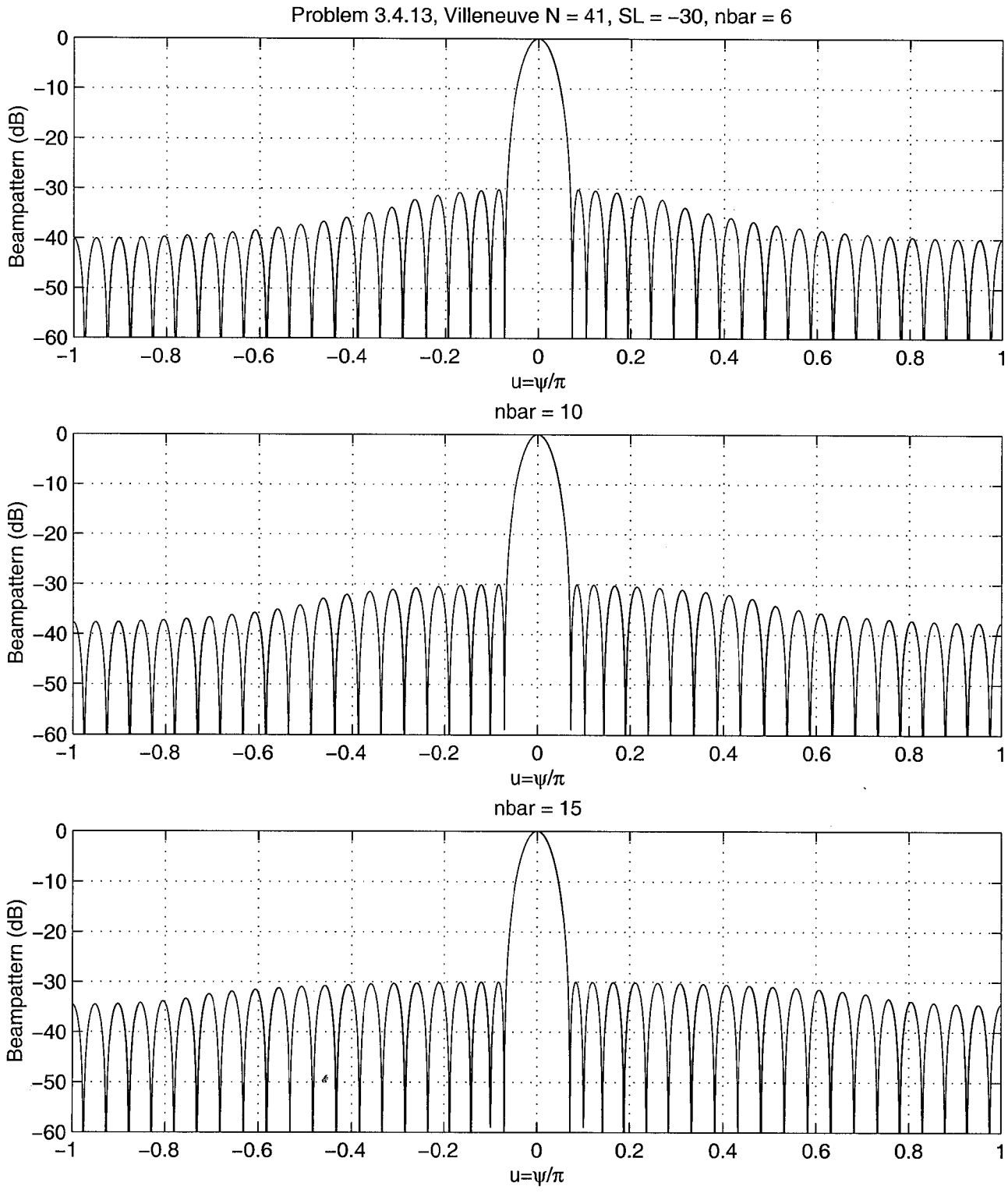
a) First $\bar{n}-1$ roots: modified Dolph-Chebychev (3.193)
Rest of roots: uniform (3.194)
weights $w = \text{poly}(z)$

b) From plots, we see that as $\bar{n}$ increases, more Dolph-Chebychev roots are used and the beampattern is closer to the D-C. Beampattern. Sidelobes are higher!

c) The weights are:

0.0100
0.0103
0.0109
0.0119
0.0132
0.0150
0.0170
0.0192
0.0214
0.0236
0.0257
0.0277
0.0296
0.0313
0.0330
0.0344
0.0356
0.0365
0.0372
0.0376
0.0377
0.0376
0.0372
0.0365
0.0356
0.0344
0.0330
0.0313
0.0296
0.0277
0.0257
0.0236
0.0214
0.0192
0.0170
0.0150
0.0132
0.0119
0.0109
0.0103
0.0100

3.4.13 (2)


Problem 3.4.13, Villeneuve N = 41, SL = –30, nbar = 6
Beampattern (dB)
0
–10
–20
–30
–40
–50
–60
–1
–0.8
–0.6
–0.4
–0.2
0
0.2
0.4
0.6
0.8
1
u=ψ/π
nbar = 10
Beampattern (dB)
u=ψ/π
nbar = 15
Beampattern (dB)
u=ψ/π