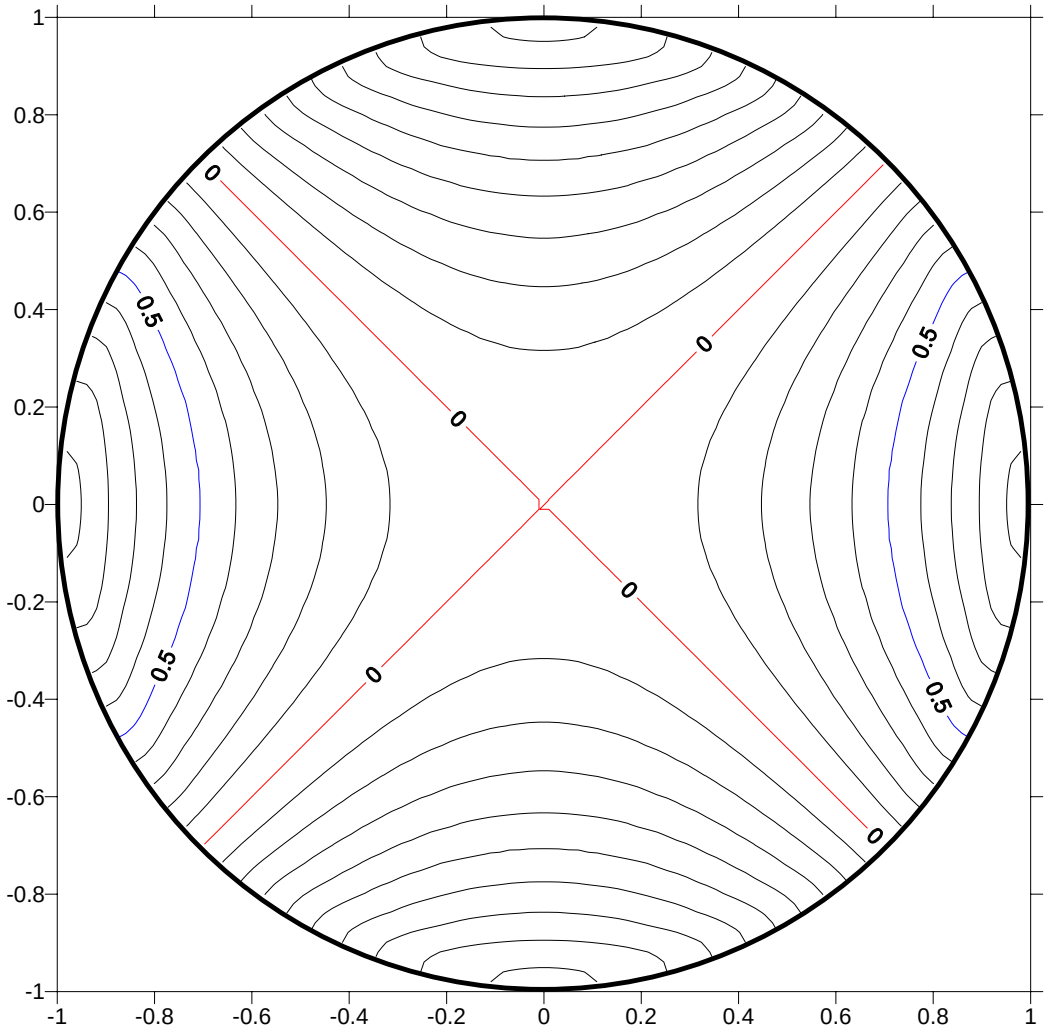
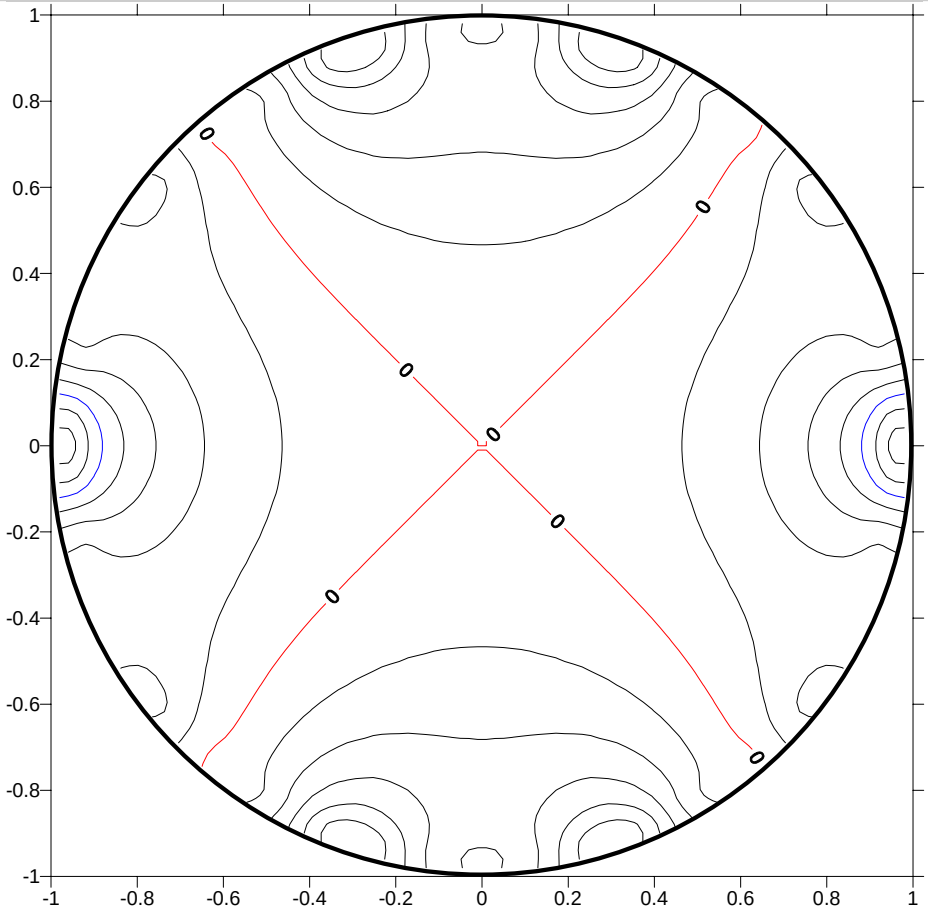
Exact solution $u(x) = \rho^2 \cos(2\phi)$

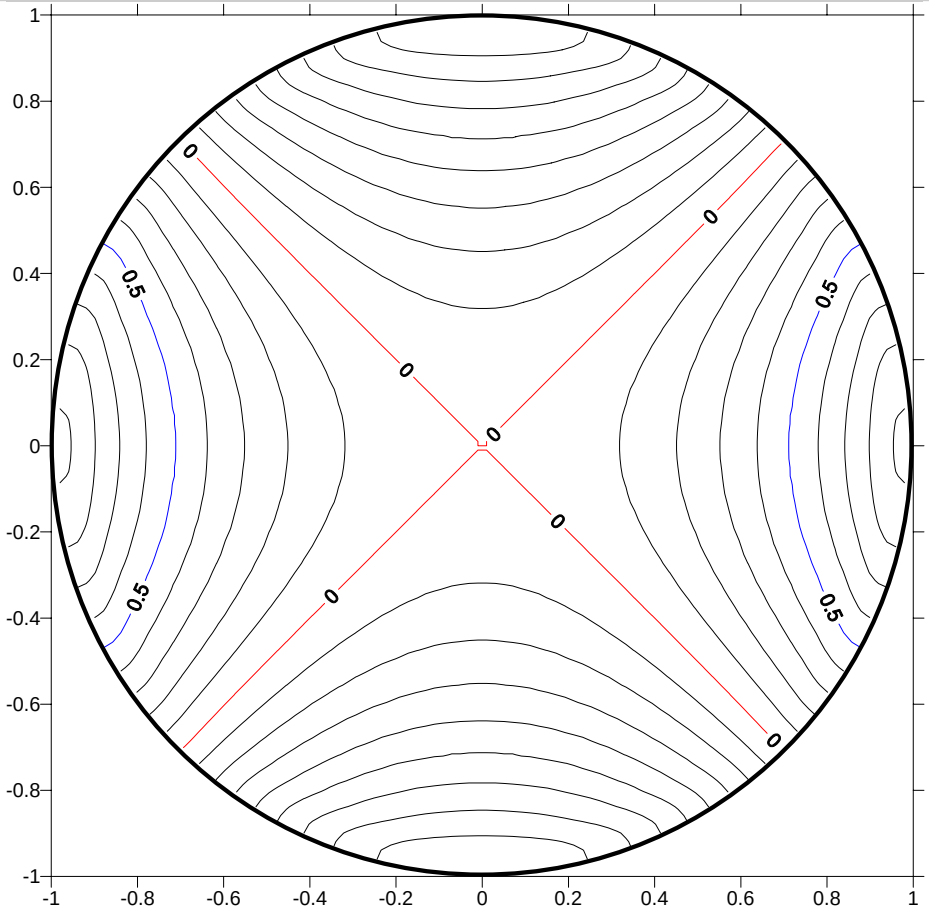


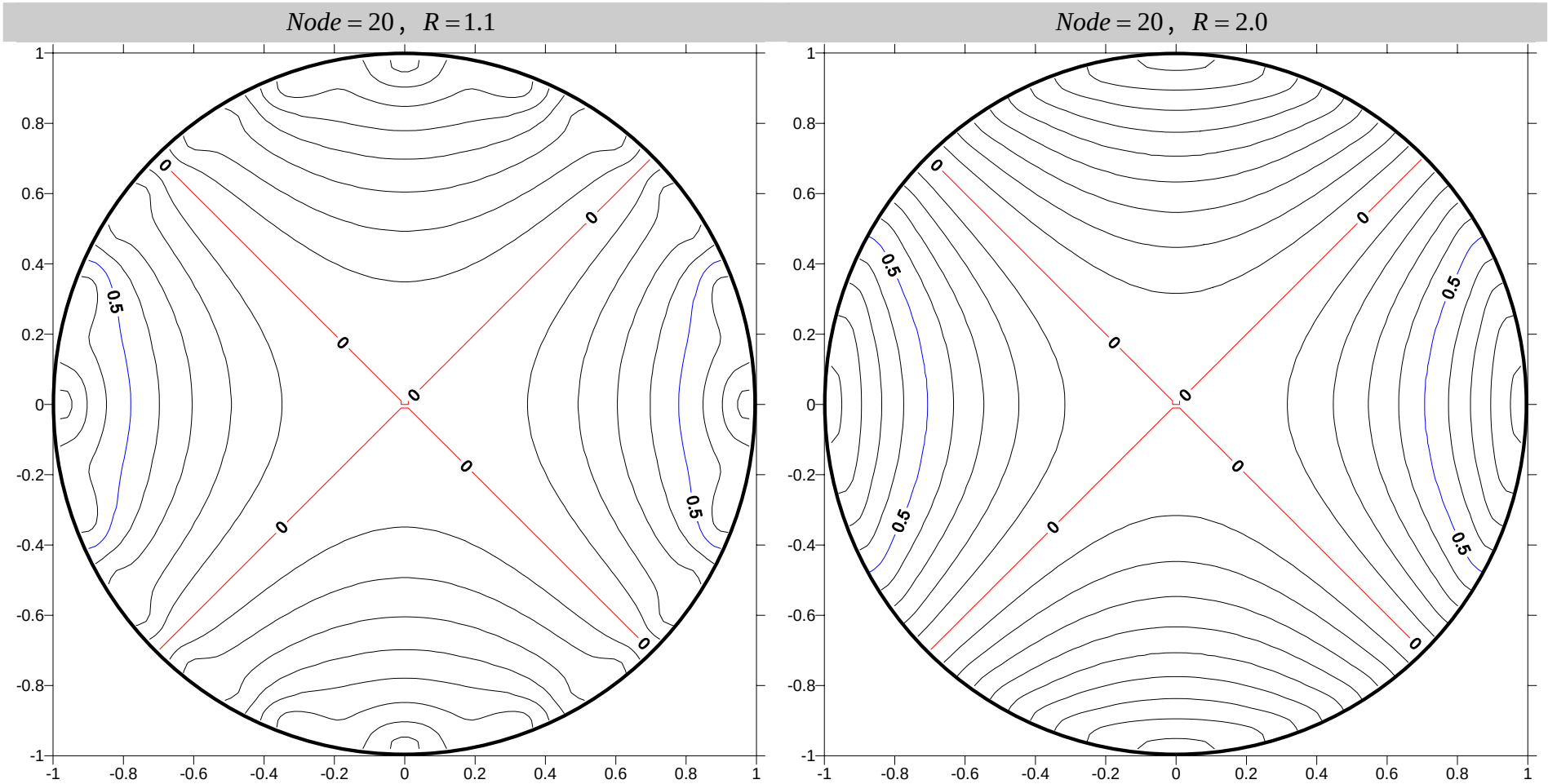
MFS Double layer (Radial) $u(x_i)=\sum T(s_j,x_i)\varphi(s_j)$, $T(s,x)=\frac{1}{R}+\left(\frac{\rho}{R}\right)^m \cos m(\theta-\phi)$, $R>\rho$

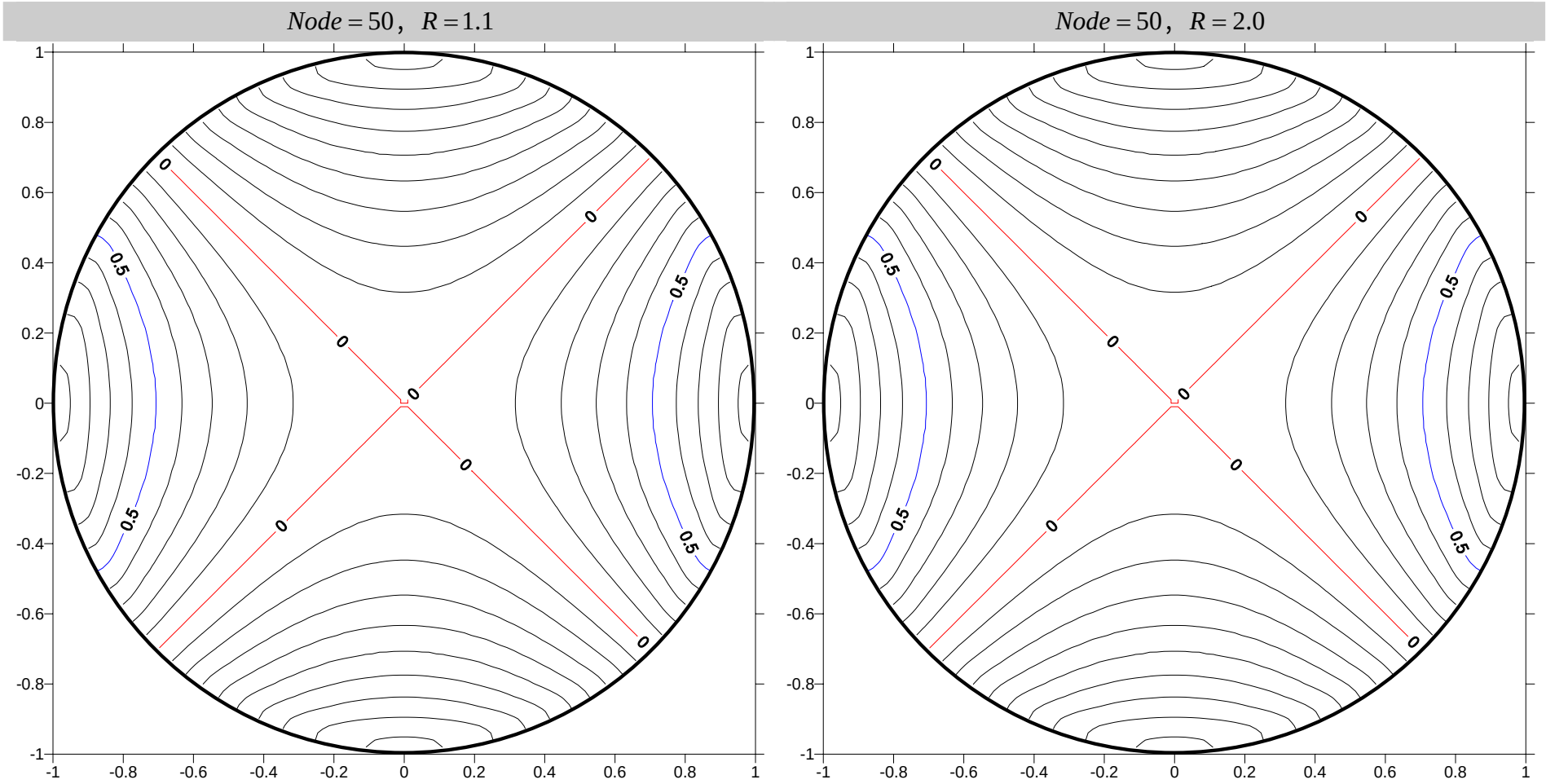
$Node=10$, $R=1.1$



$Node=10$, $R=2.0$

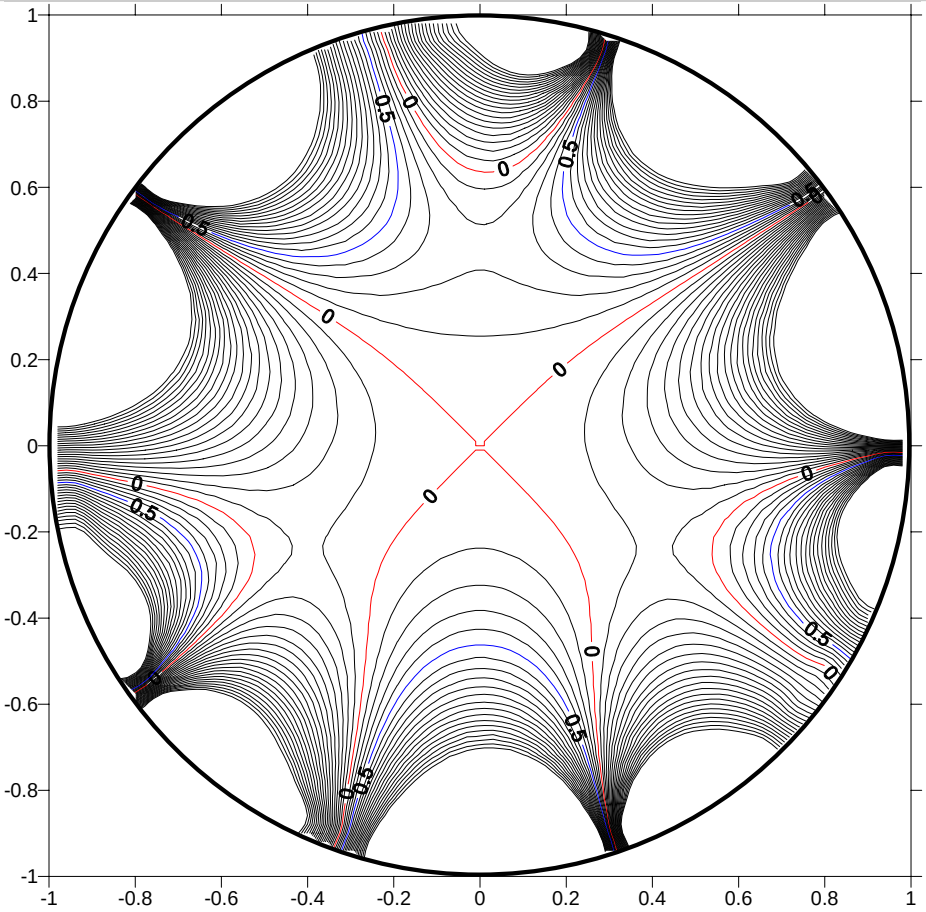



Node = 20 , R = 1.1
Node = 20 , R = 2.0
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
0
0.5

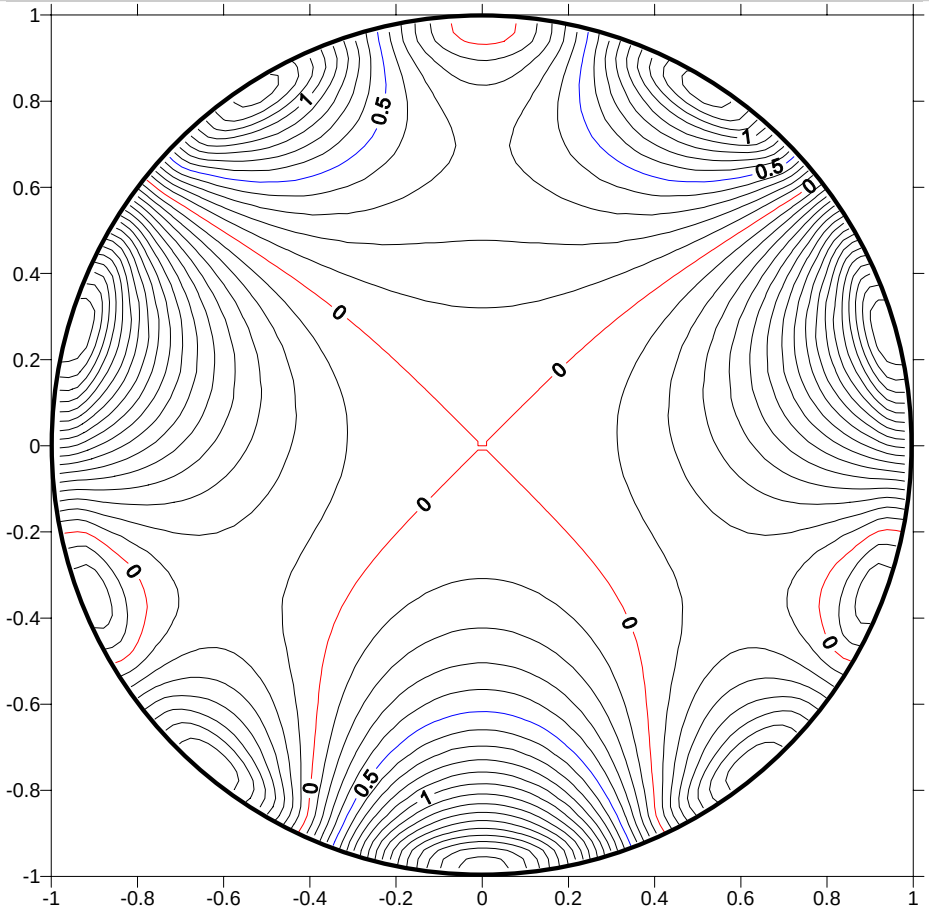

Node = 50， R = 1.1
Node = 50， R = 2.0
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
0
0.5

MFS Double layer (Angular) $u(x_i)=\sum T(s_j,x_i)\varphi(s_j)$, $T(s,x)=\left(\frac{\rho}{R}\right)^m \sin m(\theta-\phi)$, $R>\rho$

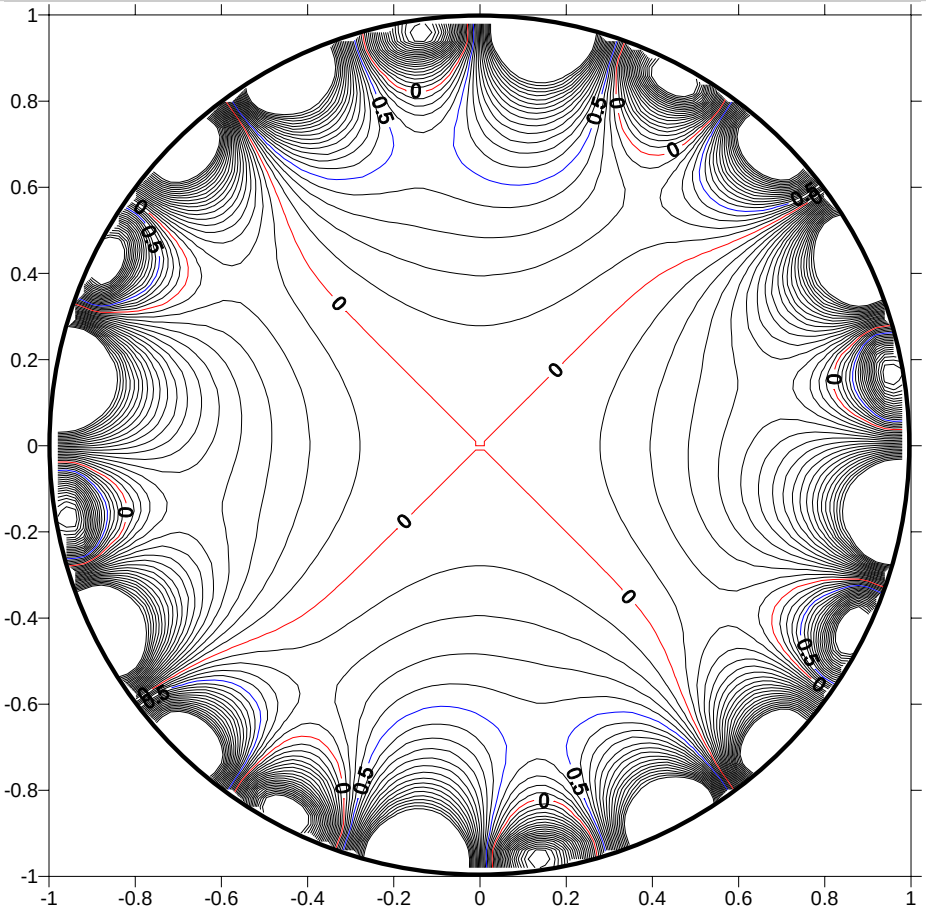
$Node=10$, $R=1.1$



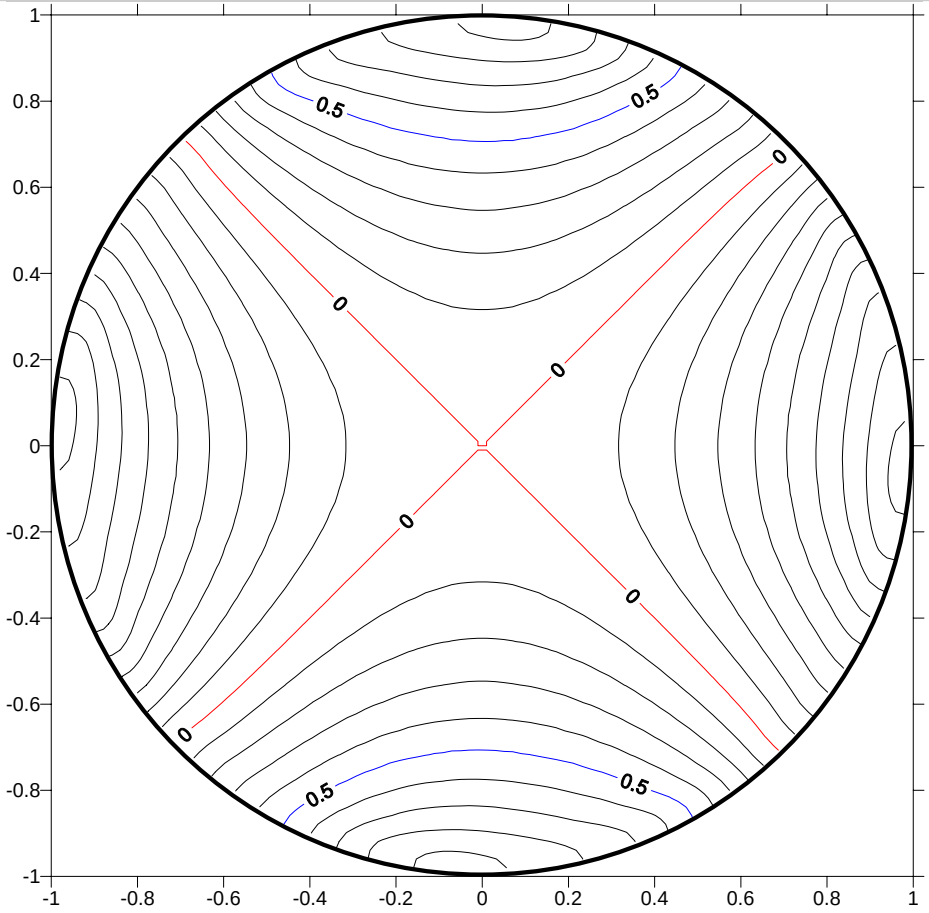
$Node=10$, $R=2.0$

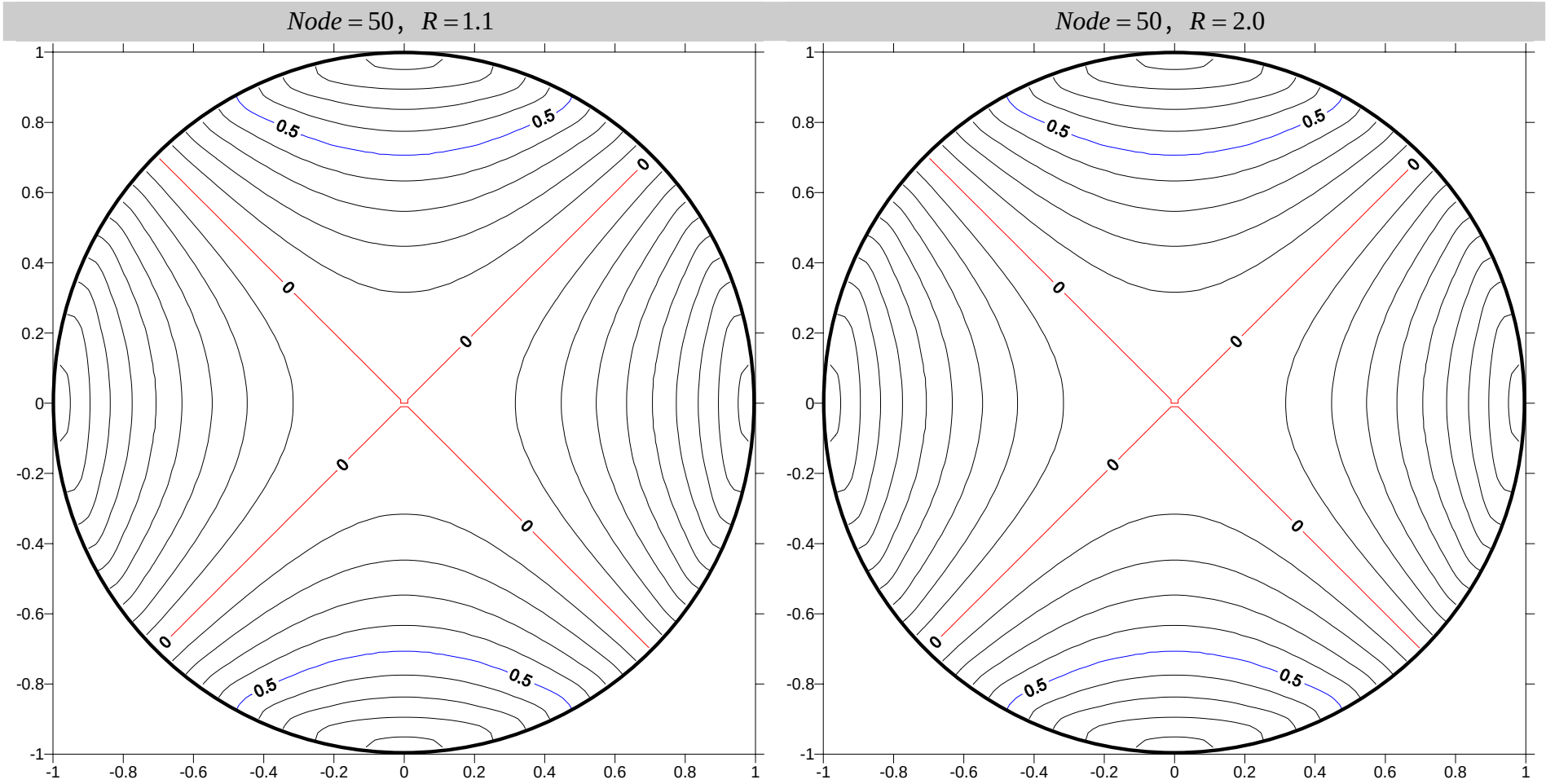


$Node = 20,\ R = 1.1$



$Node = 20,\ R = 2.0$





(1) Nodes are the more points the more exact.

(2) Location of fictitious far away the boundary is better than closer.

(3) Radial is better than angular.

BEM HW9 BY tashi