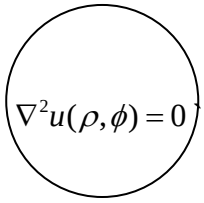
系所：_____班級：_____學號：_____姓名：_____

國立台灣海洋大學河海工程研究所 BEM 2006 第 09 次作業(MFS)

Please resolve the solution $\nabla^2 u(\rho,\phi)=0, u(1,\phi)=\cos(2\phi)$ using MFS

Odd number:

$$u(x_i)=\sum_{j=1} U(s_j,x_i)\varphi_j(s_j), x\in D$$



$u(1,\phi)=\cos(2\phi)$

Even number:

$$u(x_i)=\sum_{j=1} T(s_j,x_i)\phi_j(s_j), x\in D$$

Some discussions:

(1) Number of points ?
(2) Location of fictitious boundary ?
(3) Direction of dipole (radial or angular) ?

References:

1. J. T. Chen, I. L. Chen and Y. T. Lee, 2005, Eigensolutions of multiply-connected membranes using method of fundamental solution, Engineering Analysis with Boundary Elements, Vol.29, No.2, pp.166-174.
2. Fam, George S.A.; Rashed, Youssef F, **2006, Dipoles formulation for the method of fundamental solutions applied to potential problems, Advances in Engineering Software, Vol.38, No.1, pp.1-8.**
3. J. T. Chen, C. S. Wu, Y. T. Lee and K. H. Chen, 2006, On the equivalence of the Trefftz method and method of fundamental solutions for Laplace and biharmonic equations, Computers and Mathematics with Applications, Accepted. (SCI and EI)