

# The conducting disk

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Consider a circular disk of radius  $b$  and let  $r$  denote the distance from the center. If the disk is conducting, the charge distribution  $s(r)$ ,  $r < b$ , may be found by taking the disk as a limiting case of a spheroid. Conversely, given the function  $s(r)$ , can one prove that the potential is independent of  $r$  for  $r < b$ , such that the disk may indeed be taken as a conductor? It will be shown that this can be done by using suitable properties of hypergeometric functions.