# PHYS 703 Test 1
## September, 2013

1. [8 points]

   A conducting sphere of radius 1 m is centered at the origin and is at a potential of 100V. A point charge of 1C is now brought in and placed on the $x$-axis at $x = 2$m. What is the force felt by this charge (magnitude and direction)?

2. [12 points]

   Consider a metallic cuboidal box with one corner at the origin, three of whose edges coincide with the $x$, $y$, and $z$ axes, and the diagonally opposite corner is at $(x, y, z) = (a, b, c)$ where $a$, $b$, and $c$ are all positive real numbers. If the $x = 0$ face is held at constant potential $\Phi = V_0$ while all the other faces are grounded, what is the potential at a point inside the box? [Of course, the faces are appropriately isolated from each other, e.g., by thin insulation along the edges.]