1. For the circular current ring shown below, for the current element shown, what is $dA(r,\theta,\phi)$? Hint: you cannot assume $r=r'$ for this problem. Hint 2: write the answer in Cartesian coordinates, that is, actually give me $dA(x,y,z)$ in terms of $x$, $y$, $z$, $R$ and $\phi_c$.

2. Now, find $A$. Hint: do you have to find $A$ everywhere to know what it is everywhere? Hint 2: after using this hint, convert $r'$ back to spherical coordinates and then approximate $r>>R$. Hint 3: you will need $(1-x)^{-1/2} \approx 1 + x/2$. 