Simplify, PLEASE

$$\boxed{\phi(r) = \phi_1 + \frac{\rho_0}{\varepsilon_0(n+2)(n+3)}\left(a^2 - \frac{r^{n+2}}{a^n}\right) + \left(\frac{-ab}{a-b}\frac{1}{r} + \frac{b}{b-a}\right)\left[\phi_2 - \phi_1 + \frac{\rho_0}{\varepsilon_0 a^n (n+2)(n+3)}\left(b^{n+2} - a^{n+2}\right)\right]}$$

check

at $r = a$

$$\phi(a) = \phi_1 + \frac{\rho_0}{\varepsilon_0(n+2)(n+3)}(a^2 - a^2) + \left(-\frac{b}{b-a} + \frac{b}{b-a}\right)[\quad]$$

$$\phi(a) = \phi_1 \quad \checkmark$$

at $r = b$

$$\phi(b) = \phi_1 + \frac{\rho_0}{\varepsilon_0(n+2)(n+3)}\left(a^2 - \frac{b^{n+2}}{a^n}\right)$$

$$+ \underbrace{\left(\frac{b}{b-a} - \frac{a}{b-a}\right)}_{1}\left[\phi_2 - \phi_1 + \frac{\rho_0}{\varepsilon_0 a^n (n+2)(n+3)}\left(b^{n+2} - a^{n+2}\right)\right]$$

$$= \phi_1 + \frac{\rho_0}{\varepsilon_0(n+2)(n+3)}\left(a^2 - \frac{b^{n+2}}{a^n}\right)$$

$$+ \phi_2 - \phi_1 + \frac{\rho_0}{\varepsilon_0(n+2)(n+3)}\left(\frac{b^{n+2}}{a^n} - a^2\right)$$

$\phi(b) = \phi_2$!