Stakgold Units PhL 12.13.15

Green Jackson writes

$\nabla^2\Phi = -4\pi\rho$	page 13	cgs units
$\nabla^2(1/\lvert\mathbf{x}-\mathbf{x}'\rvert) = -4\pi\delta(\mathbf{x}-\mathbf{x}')$	page 13	Greens is $\Phi = 1/r$ for unit point charge
$\Phi = 1/r$	potential of a point charge	

Stakgold writes

$\nabla^2 E = -\delta(x)$	vol 2 page 48	E = fundamental solution Green's
$\Phi = (1/4\pi r)$	fundamental solution for n = 3	

Rule: To convert a Stakgold fundamental solution to a Jackson cgs units one, multiply by 4π.

Example 1: Potential of a unit point charge:

Stakgold says	$E_3 = 1/4\pi r$		
mult by 4π	$\varphi = 1/r$	Jackson	

Example 2: Potential of a unit line chage

Stakgold says	$E_2 = (1/2\pi)\ln(1/r)$		page 50
mult by 4π	$\varphi = 2\ln(1/r)$	Jackson	agrees with Purcell page 43