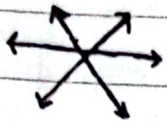
Kelistrikan. SHELVA YULITA SARI (2213022077) DATE. 25 / 03 / 2024

Hukum Gauss

$\Delta v \neq dv$

$\oint_s \vec{E} \, \vec{dl} = \int_v (\nabla \cdot \vec{E}) \, d.G$



$\oint \vec{E} \, \vec{da} = \oint \frac{q}{4\pi (2r)} \sin \theta \, d\phi$

$= \frac{q}{4\pi (2r)} \int_0^{\pi} \int_0^{2\pi} \sin \theta \, d\theta \, d\phi$

$= \frac{q \, (2\pi)}{4\pi \epsilon_0} \int_0^{\pi} \sin \theta \, d\theta$

$\oint \vec{E} \, dl = \frac{\pi q}{4\pi \epsilon_0}$

$\boxed{\oint \vec{E} \, d\vec{a} = \frac{q}{\epsilon_0}}$

$\int_v (\nabla \cdot \vec{E}) \, d.G$

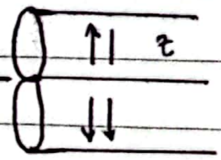
$Q_{iep} = \rho \, dG$

$q \, dl$

$\lambda \, d\rho$

$\iiint \nabla \cdot E \, dG = \iiint \frac{\rho \, dG}{\epsilon}$

$\nabla \cdot \vec{E} = \frac{\rho}{\epsilon}$



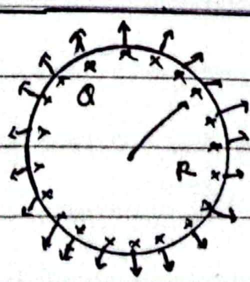
Permukaan garis.

$\oint \vec{E} : da = \frac{q}{\epsilon} \, \lambda l \, \epsilon (2\pi \, \rho . l)$

$\oint_E \, d\hat{o} = \frac{\lambda l}{\epsilon} \quad \vec{E} \quad \frac{\lambda}{2\pi \epsilon_0} \hat{\rho}$.

$\oint \vec{E} \cdot da' = \frac{q}{\epsilon_0}$

$\boxed{\vec{E} = \frac{Q}{4\pi \epsilon_0 r^2} \hat{r_0}}$



$\oint_s \vec{E} \cdot da = \frac{\pi r e}{\epsilon_0}$

$\vec{E} (4\pi r^2) = \frac{\pi r e}{\epsilon_0}$

Hitung pada a). $P < R$

b). $P > R$

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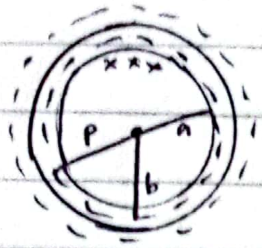

$\vec{E}\,(4\pi p^2) = \frac{4\pi}{\epsilon_0}\int_0^a p^2\,dp$

$= \frac{4\pi}{\epsilon_0}\left(\frac{1}{3}p^3\right|_0^a$

$\vec{E}\,(4\pi p^2) = \frac{4}{3}\,\frac{\pi \cdot a^3}{\epsilon_0} = \vec{E} = \frac{\rho a^3}{3\epsilon_0 p^2}\,\hat{e}$

$p < a \rightarrow \vec{E} = 0$

$a < p < b$

$\oint \vec{E} \cdot da = \frac{Q}{\epsilon_0}$

$\vec{E}\,(4\pi r^2) = \frac{1}{2}\iiint \rho\, d\tau$

$= \frac{\rho}{\epsilon_0}\int_0^a \int_a^{\pi} \int_0^{2\pi} p^2$ sampai $d\theta\, d\phi\, dl$

$= \frac{4}{\epsilon_0}\int_0^a r^2\, d.p$

$\int_0^{\pi}\int_0^{2\pi} \sin\theta\, d\theta\, d\phi$

$= 4\pi$

$\vec{E} \rightarrow p > b$

$\oint \vec{E} \cdot d\vec{a} = \frac{Q}{\epsilon_0}$.

$\vec{E} \cdot (4\pi p^2) = \frac{1}{\epsilon_0}\int_a^b \int_0^{\pi}\int_0^{2\pi} p$ sampai $\theta\, d\theta\, d\phi\, dp$

$p > b$