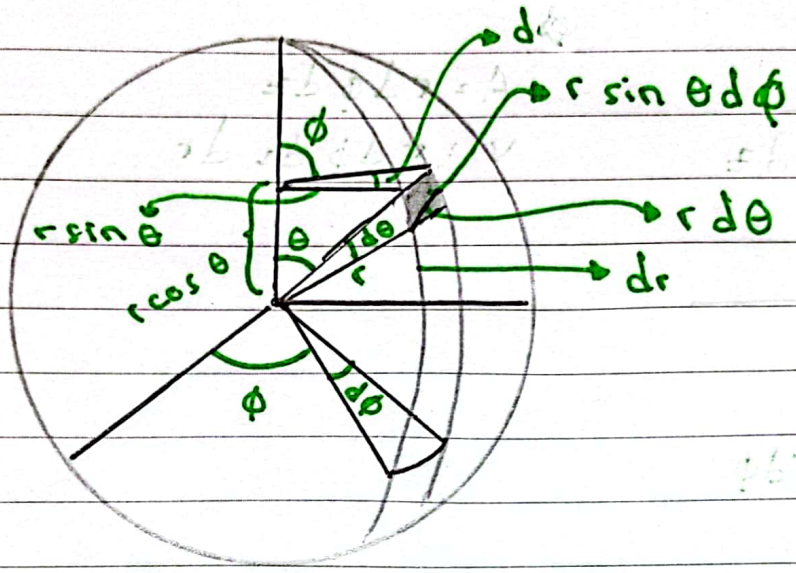
kalisma

No 4-3-24
Date



ϕ : si

$A = P \times l$

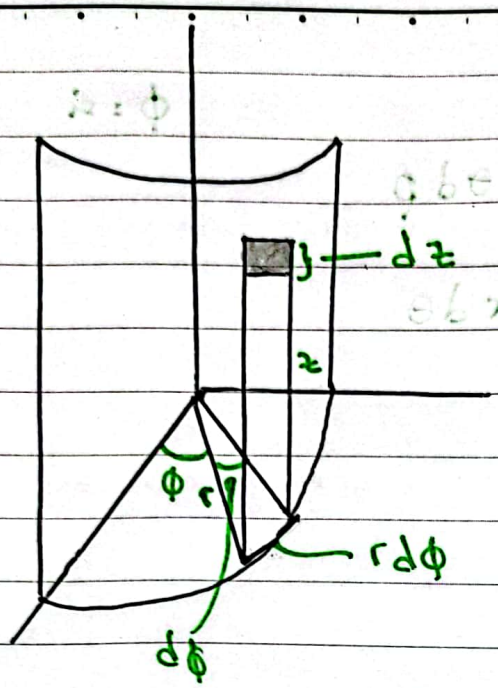
$= r d\theta \cdot r \sin\theta \, d\phi$

$= r^2 \sin\theta \, d\theta \, d\phi$

$V = r^2 \sin\theta \, d\theta \, d\phi \, dr$

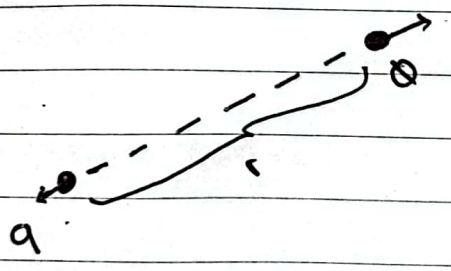
$$A = \int_0^{2\pi} \int_0^{\pi} r^2 \sin\theta \, d\theta \, d\phi = 4\pi r$$

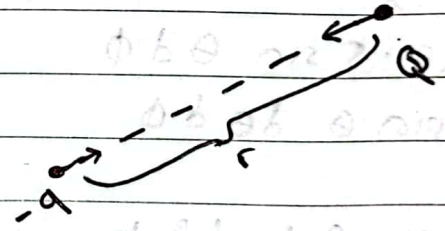
$$A = r^2 \int_0^{2\pi} d\phi \int_0^{\pi} \sin\theta$$



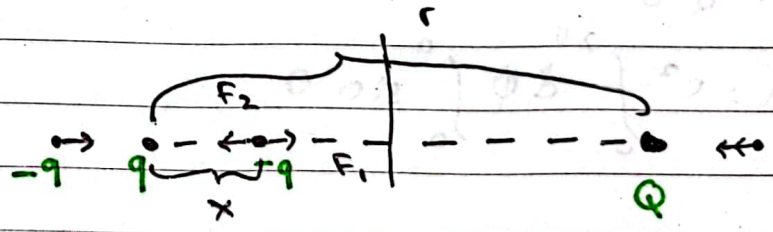
$A = r\, d\phi\, dz$

$V = r\, d\phi\, dz\, dr$





$$\vec{F} = \frac{1}{4\pi\varepsilon_0} \frac{qQ}{r^2} \hat{r}_0$$



$\vec{F}_1 = \vec{F}_2$

$$\frac{kqQ}{(r-x^2)} = \frac{kqq}{x^2}$$

$Q > q$

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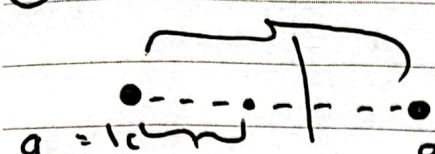
Contoh soal :

① 10 m



kalo ga ada gaya maka Vektornya tidak bergerak ketanan maupun ketiri

$q_3 = -2C$

$\vec{F_1} = \vec{F_2}$

$k\frac{1 \cdot 2}{x^2} = k\frac{2 \cdot 3}{(10-x)^2}$

$\frac{1}{x^2} = \frac{3}{(10-x)^2}$

$(a+b)^2$
$a^2 + 2ab + b^2$

$(10-x)^2 = 3x^2$

$100 - 20x + x^2 = 3x^2$

$100 = 3x^2 + 20x - x^2$

$100 = 2x^2 + 20x$

$0 = 2x^2 + 20x - 100$

$0 = x^2 + 10x - 50$

$a = 1 \quad b = 10 \quad c = -50$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$= \frac{-10 \pm \sqrt{10^2 - 4(1)(-50)}}{2(1)}$

$= \frac{-10 \pm \sqrt{100 + 200}}{2}$

$$x = \frac{-10 \pm \sqrt{300}}{2}$$

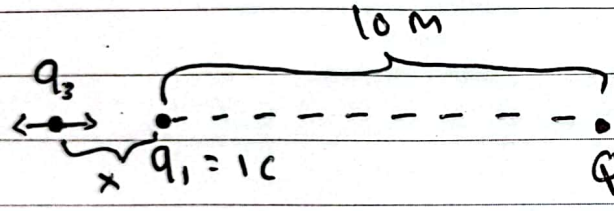
$$x = \frac{-10 \pm 10\sqrt{3}}{2}$$

$$x_1 = \frac{-10 + 10\sqrt{3}}{2} \qquad x_2 = \frac{-10 - 10\sqrt{3}}{2}$$

$$x_1 = -5 + 5\sqrt{3} \qquad x_2 = -5 - 5\sqrt{3}$$

$$= -13,66 \qquad x = 3,66$$

(2)



$q_3 = 1\,C$

$\vec{F_1} = \vec{F_2}$

$$\cancel{k}\,\frac{q_1 \cancel{q_3}}{x^2} = \cancel{k}\,\frac{\cancel{q_3} q_2}{(10+x)^2}$$

$$\frac{1}{x^2} = \frac{2}{(10+x)^2}$$

$$2x^2 = (10 + x^2)$$

$$2x^2 = 100 + x^2 + 20x$$

$$2x^2 - x^2 - 20x - 100 = 0$$

$$x^2 - 20x - 100 = 0$$ (Lanjut pakai rumus abc)

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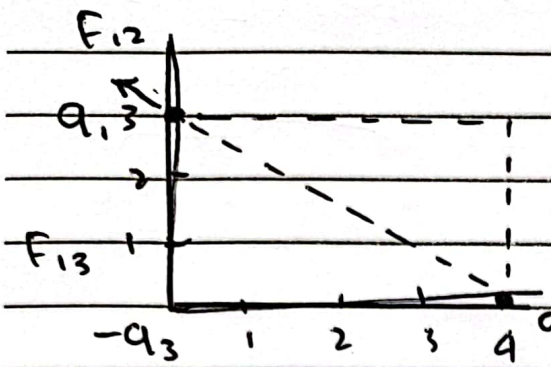

$$\vec{F}_{12} = k\frac{q_1 q_2}{5^2}\left(\frac{-4\hat{i}+3\hat{j}}{5}\right)$$

$$F_{13} = k\frac{q_1 q_3}{3^2}(-\hat{j})$$

cara dapat $-\hat{j}$

$$\frac{(0\hat{i}-3\hat{j})}{\sqrt{0^2+3^2}} = \frac{-3\hat{j}}{3} = -\hat{j}$$

cara dapat 5

$$\sqrt{3^2+4^2}$$