Nama : Prames Ray Lapian

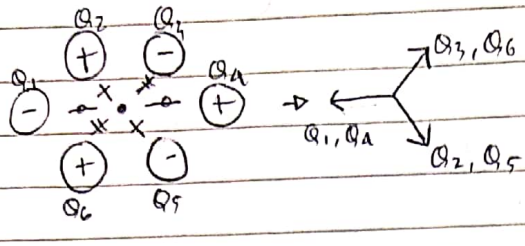
NPM : 1408102100 59

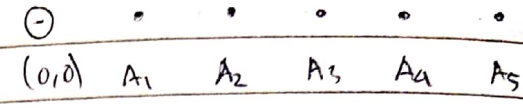
No.

Date

1. Tugas 1 : kondisi - 0

2. $Q = -1$





$ET = E_1 + E_2 + E_3 + E_4 + E_5 + E_6$

$E_1 = \frac{k \cdot Q}{r_1} = \frac{9.10^9 \cdot -1}{(0,59)^2} = -25,85 \cdot 10^9$

$Q_1 = (-1.18, 0)\,m$ $\quad Q_1 = Q_4$

$Q_2 = (-0.59, 0.5)\,m$ $\quad Q_2 = Q_5$

$Q_3 = (0.59, 0.5)\,m$ $\quad Q_3 = Q_6$

$Q_4 = (1.18, 0)\,m$

$Q_5 = (0.59, -0.5)\,m$

$Q_6 = (-0.59, -0.5)\,m$

$E_2 = \frac{k \cdot Q}{r_2} = \frac{9.10^9 \cdot -1}{(1,3924)^2} \approx -1,99 \cdot 10^9$

$E_3 = \frac{k \cdot Q}{r_3} = \frac{9.10^9 \cdot -1}{(3,1329)^2} = -0,916 \cdot 10^9$

$ET = 2(E_1 + E_3 + E_5)$

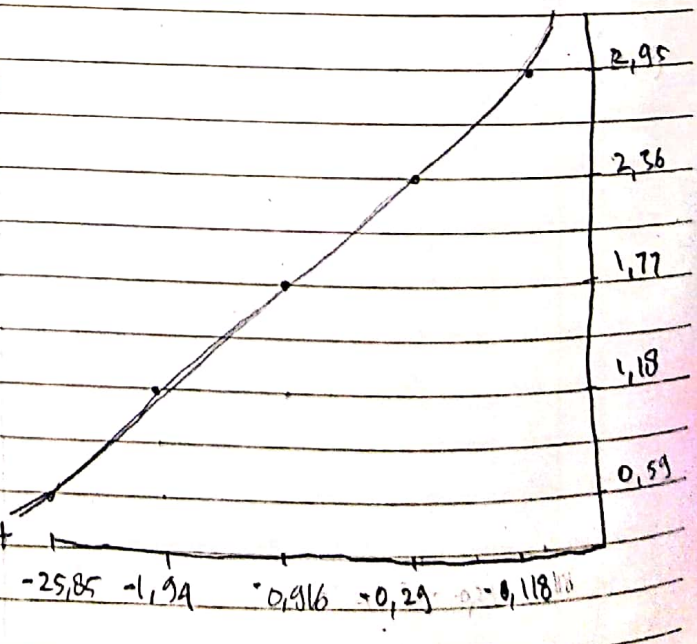
$E_4 = \frac{k \cdot Q}{r_4} = \frac{9.10^9 \cdot -1}{(5,5696)^2} = -0,29 \cdot 10^9$

$E_1 = \frac{k \cdot Q_1}{r_1^2} = \frac{9.10^9 \cdot 1,6.10^{-19}}{1,39}\,\hat{i} = 1,44.10^{-9}$

$E_5 = \frac{k \cdot Q_5}{r_5} = \frac{9.10^9 \cdot -1}{(8,7025)^2} = -0,118 \cdot 10^9$

$E_3 = \frac{k \cdot Q_3}{r_3^2} = \frac{9.10^9 \cdot 1,6.10^{-19}}{0,34}\,\hat{i} + \frac{9.10^9 \cdot 1,6.10^{-19}}{0,25}\,\hat{j} = \frac{1,44.10^{-9}}{0,25}$

$E_5 = \frac{k \cdot Q_5}{r_5^2} = \frac{9.10^9 \cdot 1,6.10^{-19}}{0,34}\,\hat{i} - \frac{9.10^9 \cdot 1,6.10^{-19}}{0,25}\,\hat{j} = \frac{1,44.10^{-9}}{0,25}$



$ET = 2(1,035 + 4,235 + 4,225) \cdot 10^{-9}\,\hat{i} +$

$2(5,76 - 5,76)$

$= 2(9,505) \cdot 10^{-9} + 2.(0) \cdot 10^{-9}$

$= 19,010 \cdot 10^{-9}\,\hat{i} + 0\,10^{-9}\,\hat{j}$

$= 1,9 \cdot 10^{-8}\,\hat{i} + 0\,\hat{j}$

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Date

3.

$V_0 = 59\hat{i}$ m/s

$E = 0\hat{i} + 10\hat{j}$

$m = 1$

$q = 1$

$x_0 = 0\hat{i} + 90\hat{j}$

$V_n = V_{n-1} + \frac{qE}{m}\Delta t$

$x_n = x_{n-1} + V_n \Delta t$

$V_1 = 59\hat{i} + 90\hat{j}.1 = 59\hat{i} + 90\hat{j}$

$V_2 = 59\hat{i} + 90\hat{j} + 90\hat{j}.2 = 59\hat{i} + 270\hat{j}$

$V_3 = 59\hat{i} + 270\hat{j} + 90\hat{j}.3 = 59\hat{i} + 540\hat{j}$

$V_4 = 59\hat{i} + 540\hat{j} + 90\hat{j}.4 = 59\hat{i} + 900\hat{j}$

$V_5 = 59\hat{i} + 900\hat{j} + 90\hat{j}.5 = 59\hat{i} + 1350\hat{j}$

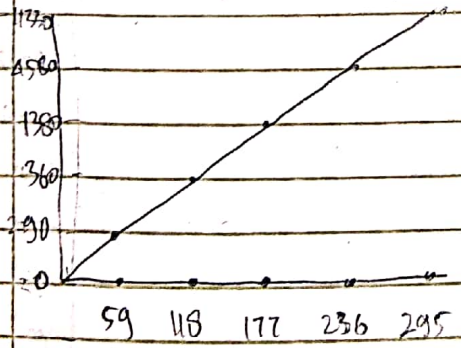
$x_1 = 0 + (59\hat{i} + 90\hat{j}).1 = 59\hat{i} + 90\hat{j}$

$x_2 = 59\hat{i} + 90\hat{j} + (59\hat{i} + 270\hat{j}).2 = 118\hat{i} + 360\hat{j}$

$x_3 = 118\hat{i} + 360\hat{j} + (59\hat{i} + 540\hat{j}).3 = 177\hat{i} + 1380\hat{j}$

$x_4 = 177\hat{i} + 1380\hat{j} + (59\hat{i} + 900\hat{j}).4 = 236\hat{i} + 4580\hat{j}$

$x_5 = 236\hat{i} + 4580\hat{j} + (59\hat{i} + 1350\hat{j}).5 = 295\hat{i} + 11830\hat{j}$



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