No. Tugas 1
Date 21-3-2021

Fisika I

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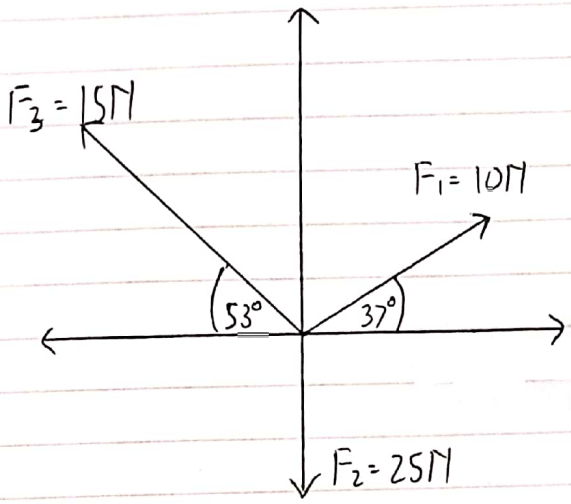
A11.2021.13254-4207

1.



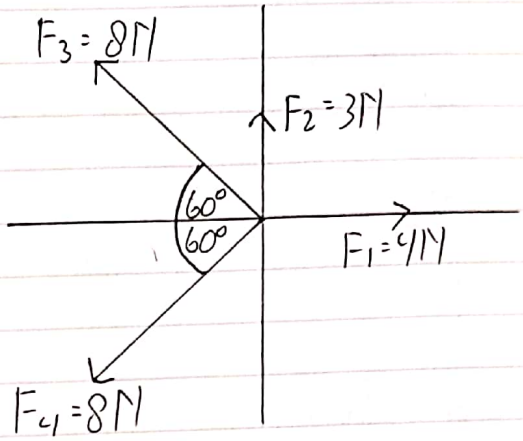
A. $\Sigma F_x = F_1 \cos 37° - F_3 \cos 53°$
$= 10 \cdot \frac{4}{5} - 15 \frac{3}{5}$
$= 8 - 9$
$= -1N$

$\Sigma F_y = F_1 \sin 37° + F_3 \sin 53° - F_2$
$= 10 \cdot \frac{3}{5} + 15 \frac{4}{5} - 25$
$= 6 + 12 - 25$
$= -7N$

$R = \sqrt{(\Sigma F_x)^2 + (\Sigma F_y)^2}$
$= \sqrt{(-1)^2 + (-7)^2}$
$= \sqrt{1 + 49}$
$= \sqrt{50}$
$= 5\sqrt{2}\ N$

B. $\tan \theta = \frac{\Sigma F_y}{\Sigma F_x}$
$= \frac{-7}{-1}$
$= 7$
$\theta = \text{arc } \tan 7$
$= 81,87°$

2.



*F_1
$F_{1x} = 4N$
$F_{1y} = 0N$

*F_2
$F_{2x} = 0N$
$F_{2y} = 3N$

*F_3

$\cos 60° = \frac{F_{3x}}{F_3}$	$\cos 30° = \frac{F_{3y}}{F_3}$
$\frac{1}{2} = \frac{F_{3x}}{8}$	$\frac{1}{2}\sqrt{3} = \frac{F_{3y}}{8}$
$-4N = F_{3x}$	$4\sqrt{3} = F_{3y}$

*F_4

$\cos 60° = \frac{F_{4x}}{F_4}$	$\cos 30° = \frac{F_{4y}}{F_4}$
$\frac{1}{2} = \frac{F_{4x}}{8}$	$\frac{1}{2}\sqrt{3} = \frac{F_{4y}}{8}$
$-4N = F_{4x}$	$-4\sqrt{3} = F_{4y}$

$\Sigma F_x = F_{1x} + F_{2x} - F_{3x} - F_{4x}$
$= 4 + 0 - 4 - 4$
$= -4N$
$= 4N$ ke kiri

$\Sigma F_y = F_{1y} + F_{2y} + F_{3y} - F_{4y}$
$= 0 + 3 + 4\sqrt{3} - 4\sqrt{3}$
$= 3\,\text{N}$
$= 3\,\text{N}$ kekanan

$FR = \sqrt{Fx^2 + F_y^2}$
$= \sqrt{(-4)^2 + (3)^2}$
$= \sqrt{16+9}$
$= \sqrt{25}$
$= 5\,\text{N}$

3. Perkalian silang =

$i \times i = 0$	$i \times j = k$	$j \times i = -k$
$j \times j = 0$	$j \times k = i$	$k \times j = -i$
$k \times k = 0$	$k \times i = j$	$i \times k = -j$

$A \times B = (4i + 3j - 2k) \times (7i + 2j + 5k)$
$= 8k - 20j - 21k + 15i - 14j + 4i$
$= 19j - 34j - 13k$

$|A \times B| = \sqrt{19^2 + (-34)^2 + (-13)^2}$
$= \sqrt{361 + 1156 + 169}$
$= \sqrt{1686}$
$= 41,06$

$\cos\theta = \frac{A \cdot B}{|A| \cdot |B|} = \frac{28 + 6 - 10}{(\sqrt{4^2 + 3^2 + (-2)^2}) \cdot (\sqrt{7^2 + 2^2 + 5^2})}$
$= \frac{24}{(\sqrt{29}) \cdot (\sqrt{78})} = \frac{24}{(5,38) \cdot (8,84)}$
$= \frac{24}{47,5592}$
$= 0,505$

$\theta \sim 60°$