$A = (3, 5)$ $B = (-2, -3)$ ← LOPPUPISTE

a) Muodosta vektori $\overrightarrow{AB} = (-2-3)\bar{i} + (-3-5)\bar{j}$
$= -5\bar{i} - 8\bar{j}$

b) Laske sen pituus $|\overrightarrow{AB}| = \sqrt{(-5)^2 + (-8)^2}$
$= \sqrt{25 + 64} = \sqrt{89} \approx$

c) Muodosta yksikkövektori

$\overrightarrow{AB}^\circ = \frac{\overrightarrow{AB}}{|\overrightarrow{AB}|} = \frac{-5\bar{i} - 8\bar{j}}{\sqrt{89}} = \frac{-5}{\sqrt{89}}\bar{i} - \frac{8}{\sqrt{89}}\bar{j}$

d) Muodosta paikkavektori

$\overrightarrow{OB} = -2\bar{i} - 3\bar{j}$

g) AB janan keskipiste $A = (\underline{3}, 5)$ $B(\underline{-2}, -3)$ (x- ↓ y ↓)

kp: $\left(\frac{3+(-2)}{2}, \frac{5+(-3)}{2}\right) = \left(\frac{1}{2}, 1\right)$

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suoralla suuntavektori $\bar{s}$

tasolla normaalivektori $\bar{n}$

e) $\vec{CD} = 2\bar{a} - 5\bar{j}$

Pistetulo $\vec{AB} \cdot \vec{CD}$

$\vec{AB} \cdot \vec{CD} = \bar{a} \cdot \bar{b}$

$= -5 \cdot 2 + (-8) \cdot (-5)$

$= -10 + 40 = 30$

f) Näiden välinen kulma

$$\cos\alpha = \frac{\bar{a} \cdot \bar{b}}{|\bar{a}| \cdot |\bar{b}|}$$

$|\vec{CD}| = |\bar{b}| = \sqrt{2^2 + (-5)^2}$

$= \sqrt{4 + 25} = \sqrt{29}$

$$\cos\alpha = \frac{30}{\sqrt{85} \cdot \sqrt{29}}$$