SMART Document Camera

K07/4

$A = (2, 3, 6)$
$B = (4, -7, -3)$

Kautta kulkeva vektori:

$\vec{AB} = (4-2)\bar{i} + (-7-3)\bar{j} + (-3-6)\bar{k}$
$\vec{AB} = 2i - 10j - 9k$

Suora on muotoa

$\overline{OP} = \overline{OA} + t\bar{s}, \quad t \in R$
$= 2\bar{i} + 3\bar{j} + 6\bar{k} + t(2\bar{i} - 10\bar{j} - 9\bar{k})$
$= 2\bar{i} + 2\bar{i}t + 3\bar{j} - 10\bar{j}t + 6\bar{k} - 9\bar{k}t$
$= (2+2t)\bar{i} + (3-10t)\bar{j} + (6-9t)\bar{k}$

Parametriesitys:

$$\begin{cases} x = 2+2t \\ y = 3-10t \\ z = 6-9t \end{cases}, \quad t \in R$$

SMART Document Camera

$\begin{cases} z = 6 - 9t \end{cases}$

Koska z on xy-tasolla 0

$0 = 6 - 9t$ | Sijoitetaan
$6 = 9t$
$t = \frac{2}{3}$

$x = 2 + 2t$
$= 2 + 2 \cdot \frac{2}{3}$
$= \frac{6}{3} + \frac{4}{3} = \frac{10}{3}$

$y = 3 - 10t$
$= 3 - 10 \frac{2}{3}$
$= \frac{9}{3} - \frac{20}{3} = \frac{-11}{3}$

Leikkauspiste $\left(\frac{10}{3}, \frac{-11}{3}, 0\right)$

V: Suuntavektori: $2i - 10j - 9k$

Parametriesitys: $\begin{cases} x = 2 + 2t \\ y = 3 - 10t \\ z = 6 - 9t \end{cases}$

Leikkauspiste: $\left(\frac{10}{3}, \frac{-11}{3}, 0\right)$

S98/7a $a = ?$

$x^2 + y^2 + 2ax + 4ay + 2y + 6a + 1 = 0$

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

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

$x^2 + 2ax + a^2 + y^2 + 2(2a+1)y + (2a+1)^2 = -6a - 1 + a^2 + (2a+1)^2$

$-6a - 1 + a^2 + 4a^2 + 4a + 1$

$(x \oplus a)^2 + (y \oplus 2a+1)^2 = 5a^2 - 2a$

$(x \ominus x_0)^2 + (y \ominus y_0)^2 = r^2$ ⟸ kp: (x_0, y_0)

$5a^2 - 2a > 0$

merk. ehto

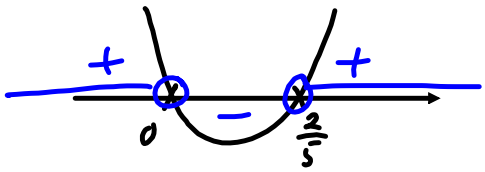
nk: $5a^2 - 2a = 0$

$a(5a-2) = 0$

$a = 0$ tai $5a - 2 = 0$

$5a = 2$

$a = \frac{2}{5}$



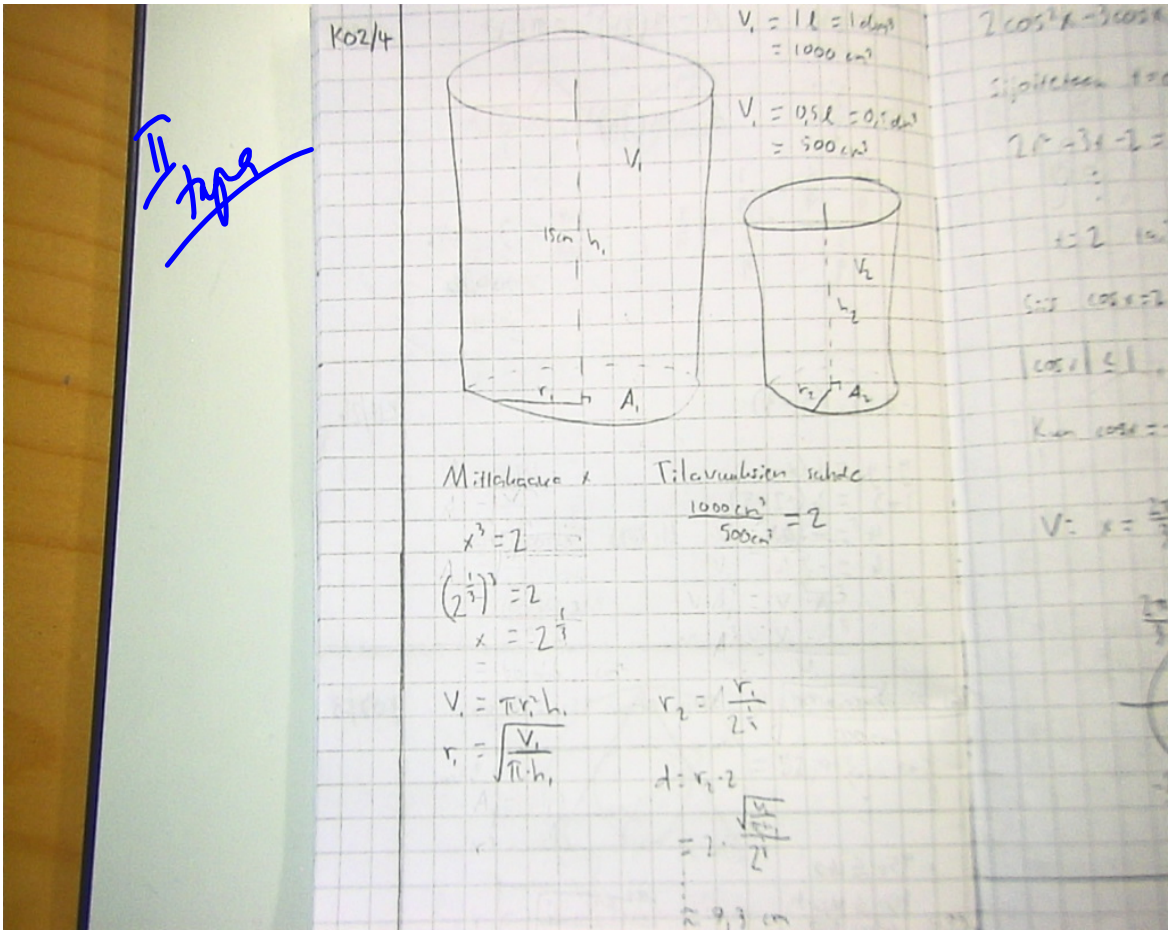
Mund. ympyrät yht. kun

$a < 0$ tai $a > \frac{2}{5}$

Ymp. kp: $(-a, -(2a+1))$

Keskipisteiden muodostama joukko

$(-a, -(2a+1))$, $a < 0$ tai $a > \frac{2}{5}$


K02/4
II tapa
$V_1 = 1\,l = 1\,dm^3$
$= 1000\,cm^3$
$V_1 = 0{,}5\,l = 0{,}5\,dm^3$
$= 500\,cm^3$
15cm
h_1
V_1
r_1
A_1
V_2
h_2
r_2
A_2
Millaisella x
$x^3 = 2$
$\left(2^{\frac{1}{3}}\right)^3 = 2$
$x = 2^{\frac{1}{3}}$
Tilavuuksien suhde
$\frac{1000\,cm^3}{500\,cm^3} = 2$
$V_1 = \pi r_1^2 h_1$
$r_1 = \sqrt{\frac{V_1}{\pi \cdot h_1}}$
$r_2 = \frac{r_1}{2^{\frac{1}{3}}}$
$d = r_1 \cdot 2$
$= 2 \cdot \frac{\sqrt{\frac{V_1}{\pi \cdot h_1}}}{2^{\frac{1}{3}}}$
$\approx 9{,}7\,cm$