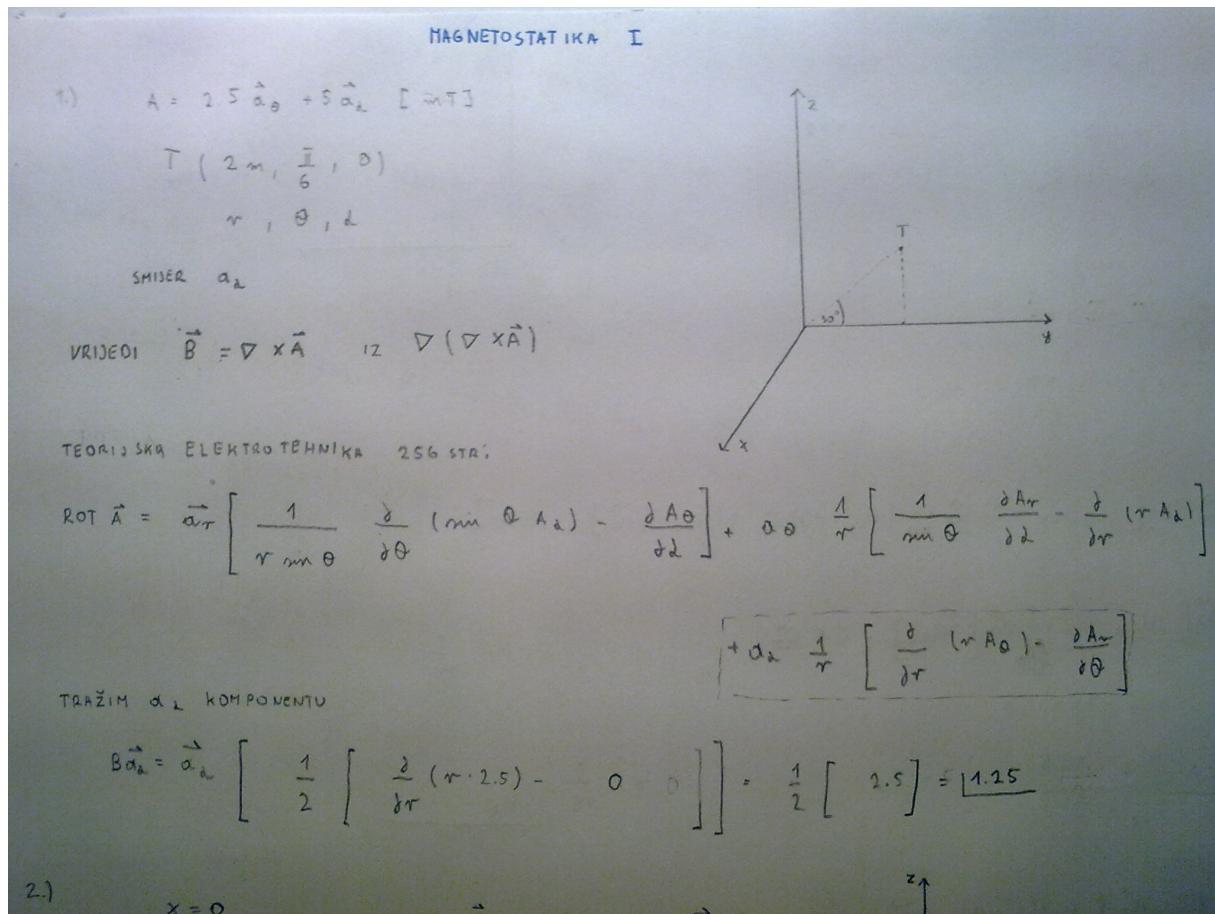
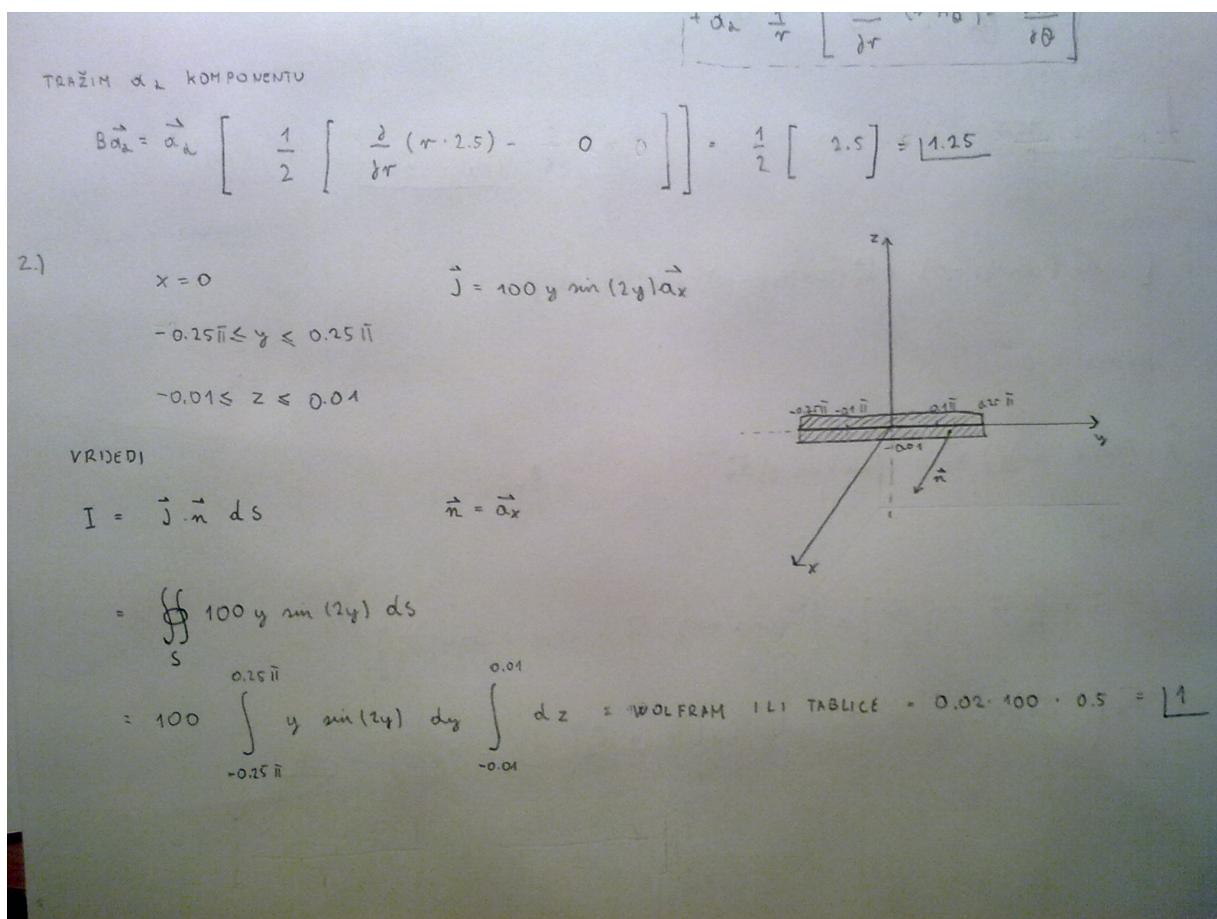


Magnetostatika - 2. ciklus ZZV 1.- 11.

by kocoedin



Slika 1.1. 1. zadatak



Slika 1.2. 2. zadatak

$[0.5 \vec{a}_x + 0.5 \vec{a}_y + 0.25 \vec{a}_z] \times L \parallel_{\perp} \vec{n}$

3) $\vec{K} = 6.5 \vec{a}_z$ $x=0$
 (1) $x < 0$ (2) $x > 0$
 $\vec{H}_1 = 10 \vec{a}_y$ $H_2 = ?$

UVJETI NA GRANICI:
 $\vec{n} \times (\vec{H}_2 - \vec{H}_1) = \vec{K}$
 $\vec{n} \cdot (\vec{B}_2 - \vec{B}_1) = 0$

$\vec{a}_x \times [(H_{2x} - 0) \vec{a}_x + (H_{2y} - 10) \vec{a}_y + (H_{2z} - 0) \vec{a}_z] = 6.5 \vec{a}_z$
 $\vec{a}_x [H_{2y} - 10] - \vec{a}_y [H_{2z}] = 6.5 \vec{a}_z$ $H = \frac{B}{\mu_0}$

$H_{2y} - 10 = 6.5$
 $\underline{\frac{H_{2y} = 16.5}{H_{2z} = 0}}$ $\underline{|H_2| = 16.5}$ LOGIČAN SKOK U RJEŠENJU
 ZA VAJEDNOST PLOŠNIH

NIJE POTREBNO:

Slika 1.3. 3. zadatak

$\mu_0 H_2 x = 0$

4.1 $\vec{A} = (\cos x \sin y) \vec{a}_x + (\sin x \cos y) \vec{a}_y$ $B_T(1,1,1)$

$$\begin{aligned}\vec{B} &= \nabla \times \vec{A} \\ &= \left[\frac{\partial}{\partial x} \vec{a}_x + \frac{\partial}{\partial y} \vec{a}_y + \frac{\partial}{\partial z} \vec{a}_z \right] \times \left[(\cos x \sin y) \vec{a}_x + (\sin x \cos y) \vec{a}_y \right] \\ &= \vec{a}_z \left(\cancel{\cos x \cos y} \right) - \vec{a}_z \left(\cancel{\cos x \sin y} \right) + \vec{a}_y (0) - \vec{a}_y (0) = \underline{\underline{0}}\end{aligned}$$

Slika 1.4. 4. zadatak

$$\vec{H}_1 = \frac{1}{\mu_0} (2\vec{\alpha}_x - \vec{\alpha}_y)$$

$$B_{2y} = ?$$

$$\vec{n} \times (\vec{H}_2 - \vec{H}_1) = 0$$

$$[0.5 \vec{\alpha}_x + 0.5 \vec{\alpha}_y + 0.25 \vec{\alpha}_z] \times [(H_{2x} - \frac{1}{\mu_0}) \vec{\alpha}_x + (H_{2y} + \frac{1}{\mu_0}) \vec{\alpha}_y + (H_{2z}) \vec{\alpha}_z] = 0$$

$$\vec{\alpha}_z \left[0.5 \left(H_{2y} + \frac{1}{\mu_0} \right) \right] - \vec{\alpha}_y \left[0.5 (H_{2z}) \right] - \vec{\alpha}_z \left[0.5 (H_{2x} - \frac{1}{\mu_0}) \right] + \vec{\alpha}_x \left[0.5 H_{2z} \right] + \vec{\alpha}_y \left[0.25 \left(H_{2x} - \frac{1}{\mu_0} \right) \right] = 0$$

$$0.5 H_{2y} + \frac{0.5}{\mu_0} - 0.5 H_{2z} + \frac{1}{\mu_0} = 0$$

$$3 \cdot 0.5 B_{2y} - 3 \cdot 0.5 B_{2z} + 1.5 = 0$$

$$1.25 H_{2x} + \frac{1}{2\mu_0} - 0.5 H_{2z} = 0$$

$$3 \cdot 0.25 B_{2x} - 3 \cdot 0.5 B_{2z} + 0.5 = 0$$

$$0.5 H_{2z} - 0.25 H_{2y} - \frac{0.1}{4\mu_0} = 0$$

$$3 \cdot 0.5 B_{2z} - 3 \cdot 0.25 B_{2y} - 0.25 = 0$$

$$1.25 = 0.5 B_{2y} + 1.25$$

$$[\mu_0 \mu_{m2} H_2 - \mu_0 M_{m1} H_1] = 0$$

$$\left[(0.5 \vec{\alpha}_x + 0.5 \vec{\alpha}_y + 0.25 \vec{\alpha}_z) \cdot (-\vec{\alpha}_x (3H_{2x} - 8) + \vec{\alpha}_y (3H_{2y} + 4) + \vec{\alpha}_z (3H_{2z})) \right] = 0$$

$$0.5 (3H_{2x} - 8) + 0.5 (3H_{2y} + 4) + 0.25 (3H_{2z}) = 0$$

$$\frac{1}{2} \left(\frac{B_{2y} + 1}{\mu_0} - 8 \right) + \frac{1}{2} \left(\frac{3B_{2y}}{\mu_0} + 4 \right) + \frac{1}{4} \left(\frac{1.5 B_{2y} + 0.5}{\mu_0} \right) = 0$$

$$\frac{B_{2y} + 3B_{2y} + 0.75B_{2y}}{4\mu_0} = 9 - 4 - \frac{0.25}{\mu_0} - \frac{1}{4\mu_0}$$

$$4.75 B_{2y} = 4\mu_0 - 1.25$$

9
4
0.25
μ₀
μ₀
μ₀

Slika 1.5. 5. zadatak ne ispreda dobro al mislim da je princip ok

ISTO KAO U
D. ZAD
ALF TAI

6.) $\vec{A} = e^{-2z} (\sin(0.5\lambda)) \hat{a}_z$ CILINDRČNA KOORDINATNE

$B_{ar} \Rightarrow T(-0.8, \frac{\pi}{5}, 0.5)$ $\vec{B} = \nabla \times \vec{A} = \text{rot } A$

r, \hat{a}_r, z

TEORIJSKA ELEKTROTEHNIKA 256

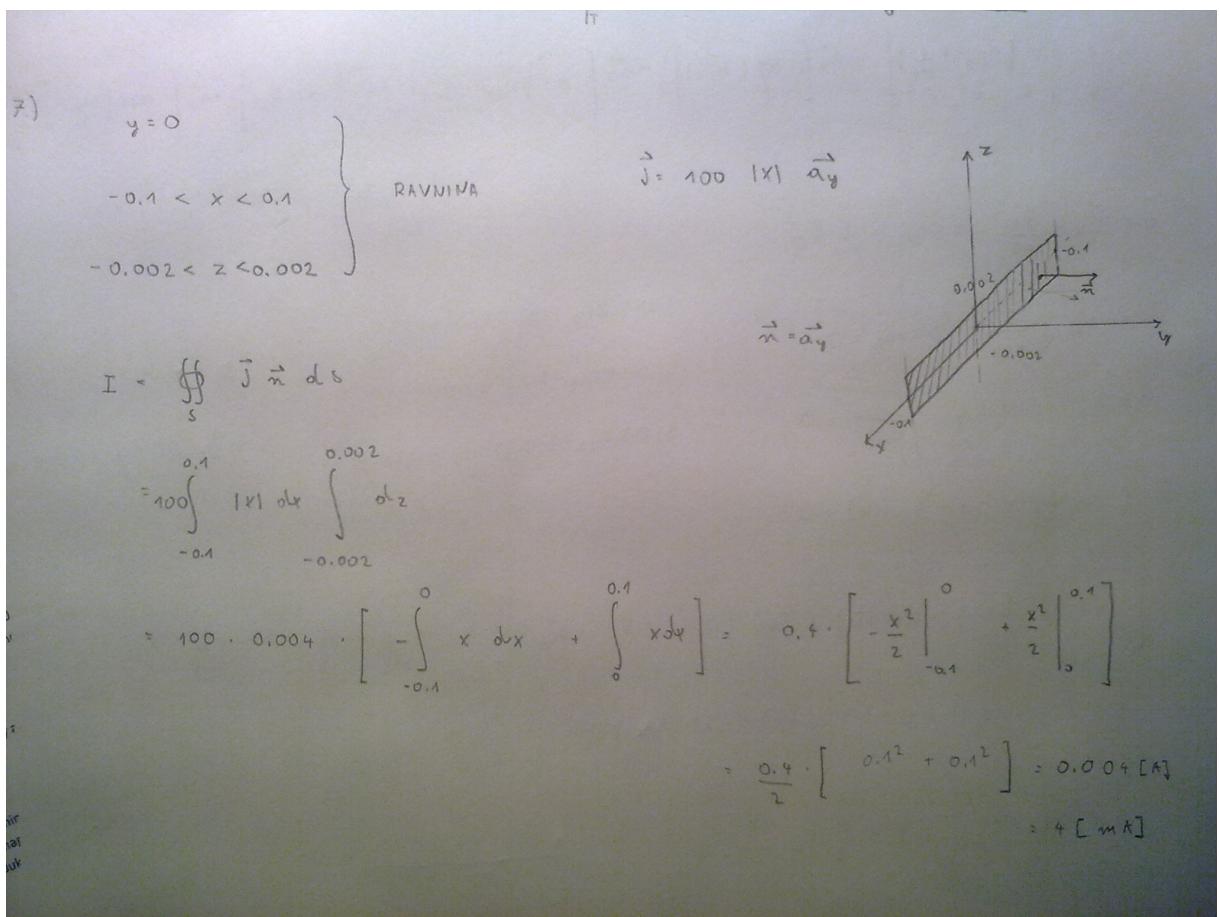
\vec{B}_{ar} TRAŽIMO \vec{a}_r SMISEL

$\text{rot } A \vec{a}_r = \vec{a}_r \left(\frac{1}{r} \underbrace{\frac{\partial A_z}{\partial z}}_0 - \frac{\partial A_z}{\partial z} \right) = \vec{a}_r \left(- \frac{\partial \left[e^{-2z} \sin(0.5\lambda) \right]}{\partial z} \right)$

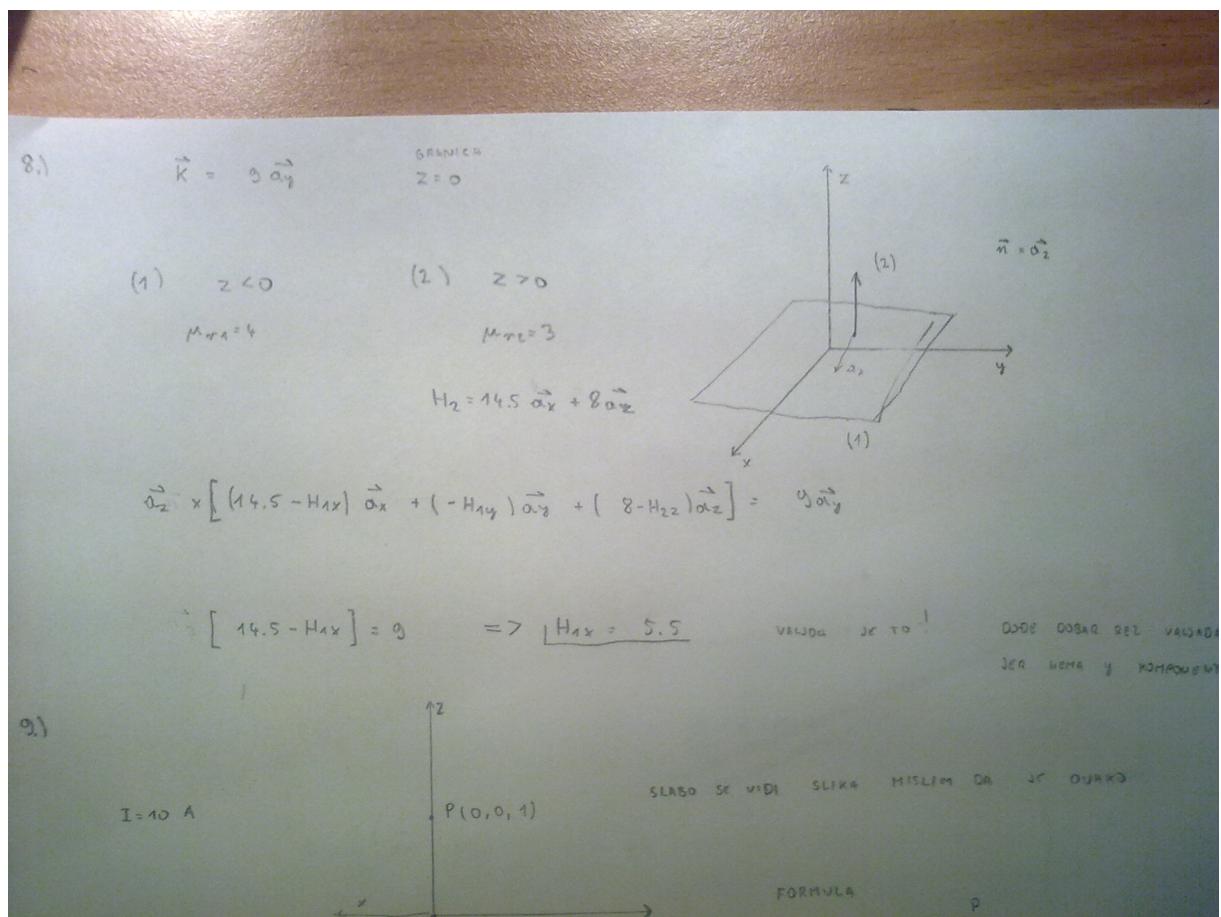
$\vec{B}_{ar} \Big|_T = -2 e^{-2z} \sin(0.5\lambda) \Big|_T = -2 e^{-\frac{2}{5}} \sin \frac{\pi}{6} = \underline{0.37}$

7.) $y=0$ $\left. \begin{array}{l} \\ -0.1 < x < 0.1 \end{array} \right\}$ RAVNINA $\vec{j} = 100 |x| \hat{a}_y$ 

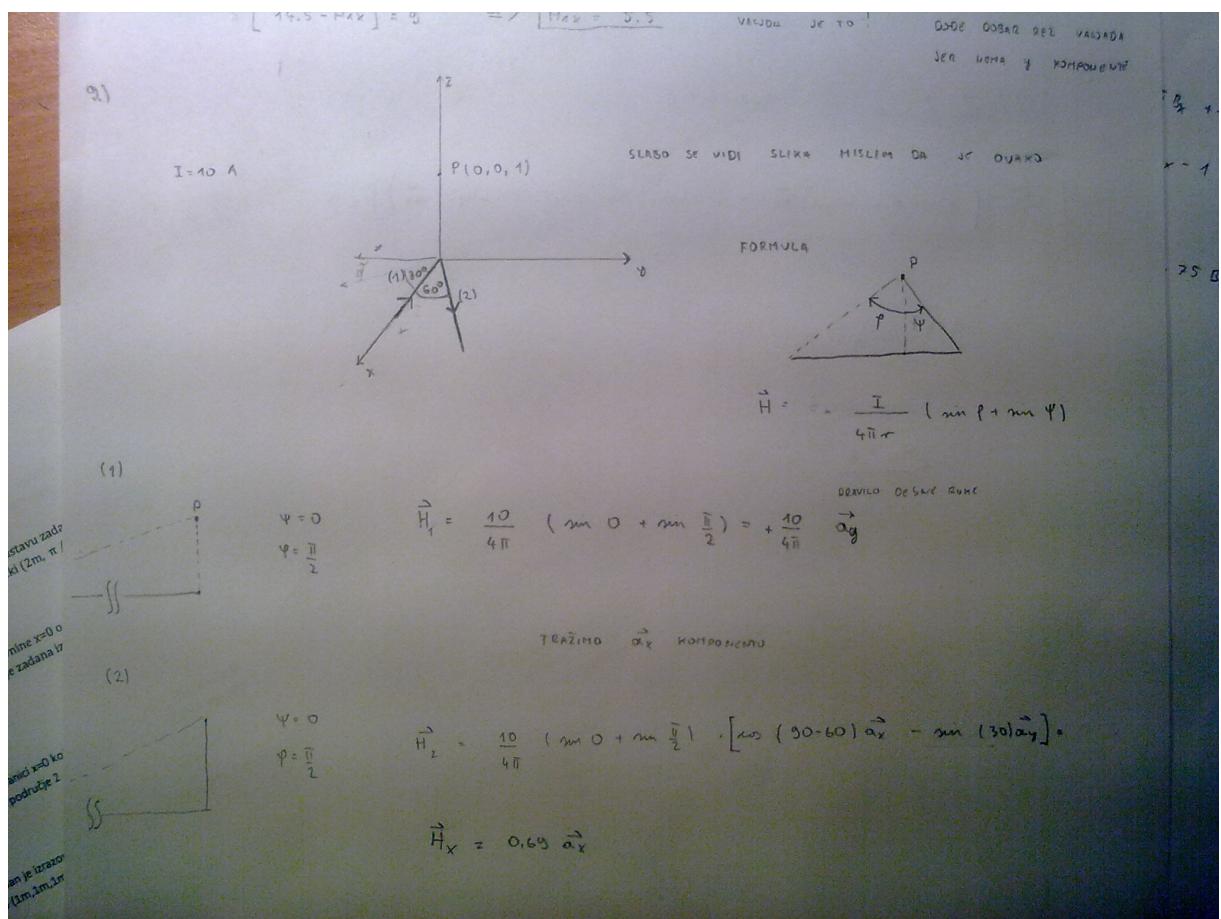
Slika 1.6. 6. zadatak



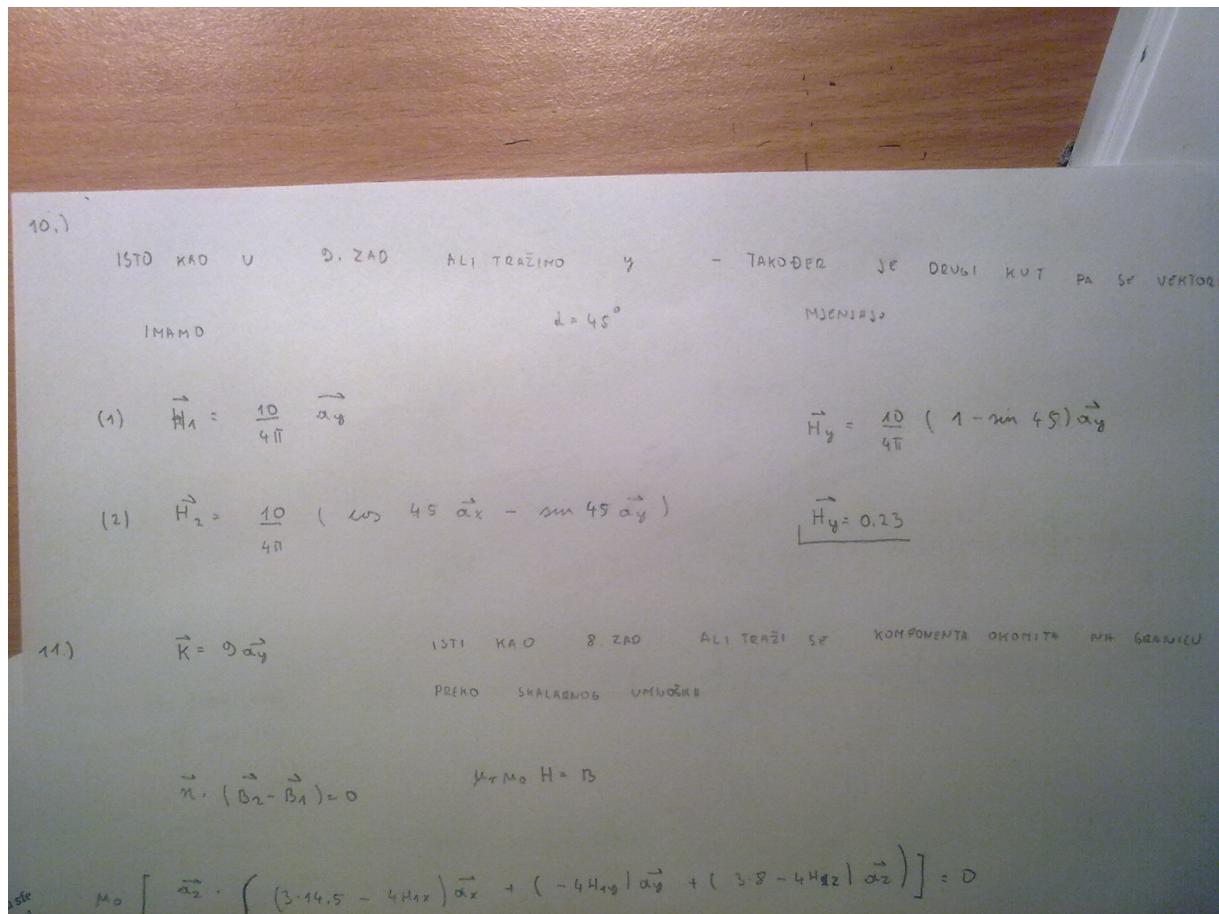
Slika 1.7. 7. zadatak



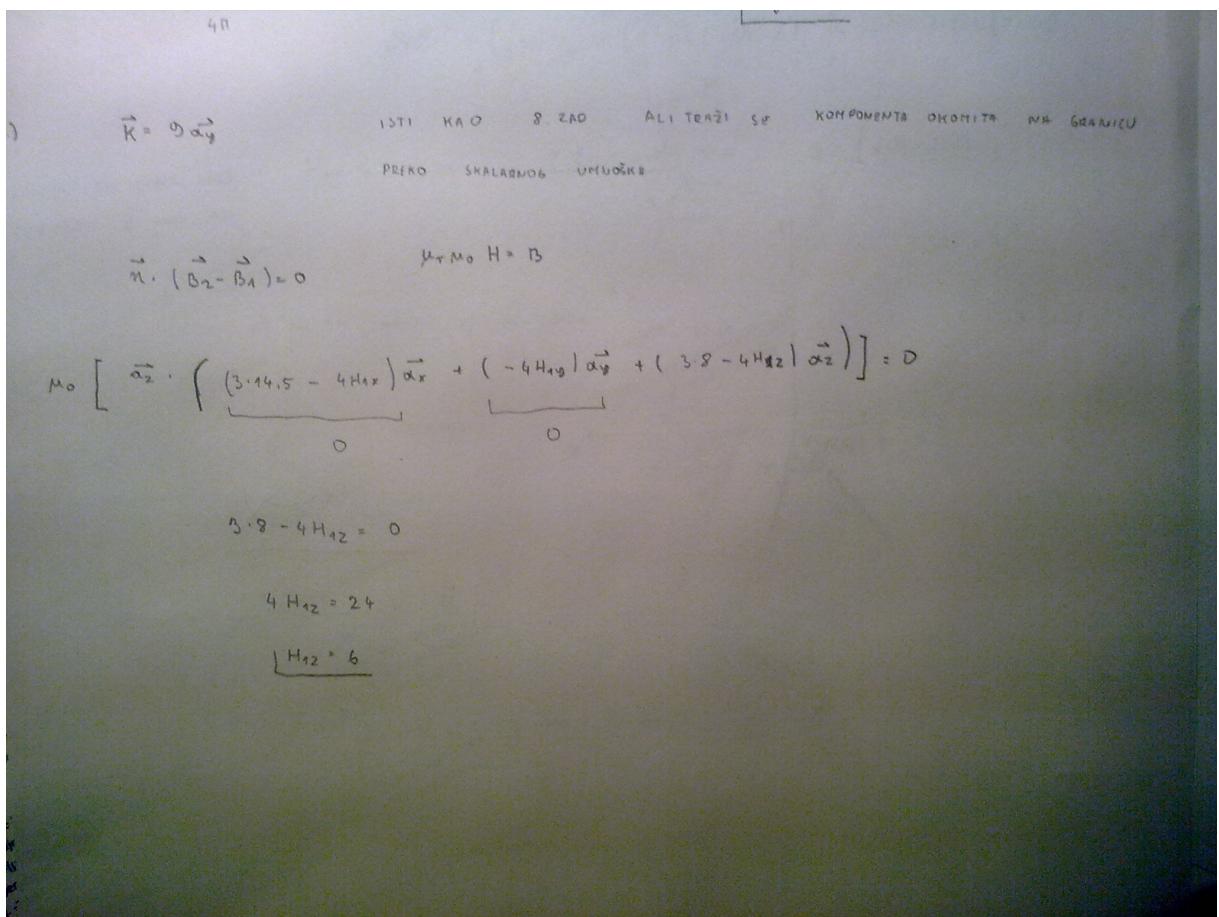
Slika 1.8. 8. zadatak



Slika 1.9. 9. zadatak



Slika 1.10. 10. zadatak



Slika 1.11. 11. zadatak

