

Rješenja ponovljenog drugog međuispita iz Matematike 3E
04.02.2010.

1. (3 boda)

$$P = \iint_D dx dy = \int_0^{\frac{\pi}{3}} d\varphi \int_0^{\sin(3\varphi)} r dr = \frac{\pi}{12}.$$

2. (3 boda)

$$\iiint_V 2x dx dy dz = 9.$$

3. (4 boda)

$$V = \iiint_V dx dy dz = \frac{9\pi}{4}\sqrt{2}.$$

4. (4 boda)

$$\iiint_V z dx dy dz = 2\pi.$$

5. (2 boda)

Skripta, str. 12.

6. (3 boda)

$$u = x + 2y, \quad v = x - 2y, \quad x = \frac{u+v}{2}, \quad y = \frac{u-v}{4}, \quad J = -\frac{1}{4},$$

$$\iint_S (x+2y)^{10}(x-2y)^8 dx dy = \iint_{S'} u^{10}v^8 |J| du dv = \frac{1}{99}.$$

7. (6 bodova)

a) (1b) Skripta, str.4, 1.2, Definicija 2.

b) (1b)

$$\lim_{t \rightarrow 0} \mathbf{r}(t) = \mathbf{i} + 3\mathbf{k}.$$

c) (2b)

$$\mathbf{r}'\left(\frac{\pi}{3}\right) = \mathbf{j} - \frac{9}{\pi}\mathbf{k},$$

$$\frac{x+1}{0} = \frac{y-\frac{\pi}{3}}{-1} = \frac{z}{-\frac{9}{\pi}} = u, \quad u \in \mathbb{R}.$$

d) (2b)

$$x = 2 + 4 \cos t, \quad y = -3 - 4 \sin t, \quad t \in [0, 2\pi].$$