DZ (8)

1. Integriraj sljedeće određene integrale:

a) $\displaystyle\int_0^1 \frac{dx}{1+x}$ (rj: $\ln 2$)

b) $\displaystyle\int_{-2}^{-1} \frac{dx}{x^3}$ (rj: $-3/8$)

c) $\displaystyle\int_2^6 \sqrt{x-2}\ dx$ (rj: $16/3$)

d) $\displaystyle\int_0^{\frac{\pi}{2}} \sin^3 x\ dx$ (rj: $2/3$)

e) $\displaystyle\int_0^1 x^3 e^{2x} dx$ (rj: $(e^2+3)/8$)

f) $\displaystyle\int_1^e \ln x\ dx$ (rj: 1)

g) $\displaystyle\int_0^1 \frac{e^x}{1+e^{2x}} dx$ (rj: $\operatorname{arctg} e - \pi/4$)

h) $\displaystyle\int_0^{\pi} \frac{dx}{3+2\cos x}$ (rj: $\pi\sqrt{5}/5$)

i) $\displaystyle\int_0^{\ln 2} \sqrt{e^x-1}\ dx$ (rj: $2-\pi/2$)

2. Odredi površinu koju krivulja $y = f(x)$ zatvara na intervalu $[0, 1]$ ako je:

a) $y = \cos x$ (rj: $\sin 1$)

b) $y = 2x + 5$ (rj: 6)

c) $y = x^2 + 2x + 1$ (rj: 7/3)

d) $y = \dfrac{x}{x+1}$ (rj: $1 - \ln 2$)

3. Izračunaj površinu dijela ravnine omeđenog s krivuljama:

a) $y = \dfrac{x^2}{2}$ i pravcima $x = 1$ i $x = 3$ te osi apscisa (rj: 13/3)

b) $x = 2 - y - y^2$ i osi ordinata (rj: 9/2)

c) $y = 2 - x^2$ i $y^3 = x^2$ (rj: 32/15)

d) $y = 2x - x^2$ i $y = -x$ (rj: 9/2)