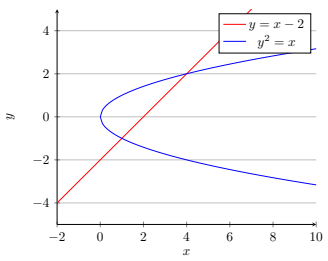
Predmet: Mataliza 1
Ukol: 11.
Verze: 1.
Autor: David Napravnik
Prezdivka: DN

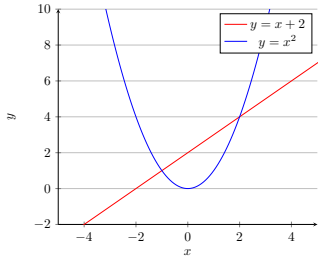
zadani

plocha utvaru ohraniceneho parabolou $y^2 = x$ a primkou $y = x - 2$

reseni

nejdrive si problem obratime prohozenim x a y
funkce se protinaji v $x = -1$ a $x = 2$
$\int x + 2 \; dx = \frac{x^2}{2} + 2x + C$
$\int_{-1}^{2} x + 2 \; dx = \frac{15}{2}$
$\int x^2 \; dx = \frac{x^3}{3} + C$
$\int_{-1}^{2} x^2 \; dx = 3$





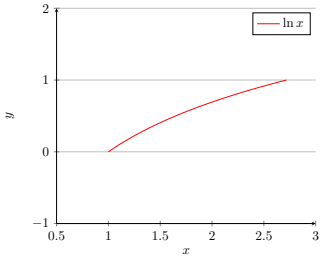
ohranicena plocha je velka $\frac{15}{2} - 3 = \underline{\underline{\frac{9}{2}}}$

zadani

plocha utvaru ohraniceneho krivkou funkce $\ln x$, osou x a primkou $x = e$

reseni

$\int \ln x \; dx = x(\ln x - 1) + C$
$\int_1^e \ln x \; dx = 1$



zadani

objem telesa vznikleho z utvaru b) rotaci kolem osy x

reseni

$\int \pi(\ln(x))^2 dx = \pi(2x - 2x\log(x) + x\log^2(x))$
$\int_0^e \pi(\ln(x))^2 dx = \pi e$

zadani

objem komoleho rotacniho kuzele s vyskou v a polomery podstav r a R

reseni

plocha 2D telesa:
$vr + \frac{(R-r)*v}{2} = \frac{v(r+R)}{2}$
obtocime kolem osy y
$\pi v(\frac{(r+R)}{2})^2$