Vypočítajte nasledujúce dvojné integrály:

1. $\iint_I y\mathrm{e}^{x+y}dxdy$, ak $I = \langle 0,4\rangle \times \langle 0,1\rangle$ $\quad\big[\mathrm{e}^4 - 1\big]$

2. $\iint_I \ln(1+x)^{2y}dxdy$, ak $I = \langle 0,1\rangle \times \langle 0,1\rangle$ $\quad\big[\ln 4 - 1\big]$

3. $\iint_I x^2 y\cos(xy^2)dxdy$, ak $I = \langle 0,\frac{\pi}{2}\rangle \times \langle 0,2\rangle$ $\quad\big[-\frac{\pi}{16}\big]$

4. $\iint_I \frac{1}{(1-xy)^2}dxdy$, ak $I = \langle 2,3\rangle \times \langle 1,2\rangle$ $\quad\big[\ln\frac{6}{5}\big]$

5. $\iint_M \cos(x+y)dxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; 0\le x\le\pi, x\le y\le\pi\}$ $\quad\big[-2\big]$

6. $\iint_M (3x^2+2y)dxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; x^2\le y\le\sqrt{x}\}$ $\quad\big[\frac{39}{70}\big]$

7. $\iint_M xydxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; x-4\le y, y^2\le 2x\}$ $\quad\big[90\big]$

8. $\iint_M y\mathrm{e}^x dxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; y^2\le x\le y+2\}$ $\quad\big[\frac{1}{2}(\mathrm{e}^4+5\mathrm{e})\big]$

9. $\iint_M (x+y)dxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; 0\le x\le 2, y\le x\le 2y\}$ $\quad\big[\frac{7}{3}\big]$

10. $\iint_M \frac{x^2}{y^2}dxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; 0<\frac{1}{x}\le y\le x\le 2\}$ $\quad\big[\frac{9}{4}\big]$

11. $\iint_M |x|dxdy$, ak M je ohraničená krivkami: $y = x^2$, $4x^2+y^2 = 12$ a $y\ge 0$ $\big[4\sqrt{3}-\frac{10}{3}\big]$

12. $\iint_M (x^2+y)dxdy$, ak M je ohraničená krivkami: $y = \frac{x}{2}$, $y = 2x$, $xy = 2$ a $x\ge 0$ $\big[\frac{17}{6}\big]$

13. $\iint_M (x^2+y)dxdy$, ak M je trojuholník ΔABC s vrcholmi $A = (1,2)$, $B = (5,2)$, $C = (4,4)$ $\quad\big[58\big]$

14. $\iint_M \sqrt{xy-y^2}dxdy$, ak $M = \{(x,y)\in\mathbb{R}^2; 0<y\le 3, \frac{x}{10}\le y\le x\}$ $\quad\big[162\big]$

15. $\iint_M (x^2y)dxdy$, ak M je ohraničená krivkami: $y = x$ a $y = x^2$ $\quad\big[\frac{1}{35}\big]$

16. $\iint_M (x^2y)dxdy$, ak M je ohraničená krivkami: $y = x-4$ a $y^2 = 2x$ $\quad\big[\frac{2412}{5}\big]$

17. $\iint_M (x+y)dxdy$, ak M je ohraničená krivkami: $x=0$, $y=\frac{3}{2}x$, $y=4-(x-1)^2$ a $x \geq 0$ $\quad \left[\frac{208}{15}\right]$

Vypočítajte trojné integrály:

1. $\iiint_M (1-x)dxdydz$, ak $M=\{(x,y,z) \in \mathbb{R}^3; x \geq 0, y \geq 0, z \geq 0, z \leq 1-x-y\}$ $\left[\frac{1}{8}\right]$

2. $\iiint_M y\cos(x+z)dxdydz$, ak M je ohraničená plochami: $y=\sqrt{x}$, $y=0$, $z=0$, $x+z=\frac{\pi}{2}$ $\quad \left[\frac{\pi^2}{16}-\frac{1}{2}\right]$

Vypočítajte objem telesa M ohraničeného rovinami: $x+y+z=4$, $x=0$, $x=3$, $y=0$, $y=2$ a $z=0$. $\quad \left[\frac{55}{6}\right]$