A

791.

A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 = -3,61$

b) $\sqrt{0,0036} + \sqrt[3]{0,008} = 0,06 + 0,2 = 0,26$

c) $(-0,006)^2 + (-0,03)^3 = 0,000\,036 + (-0,000\,027) = 0,000\,009$

d) $\sqrt{0,0196 \cdot 225} = \sqrt{0,14^2 \cdot 15^2} = \sqrt{200^4} = \sqrt{1600\,000\,000} = 40\,000$

$0,14 \cdot 15 = 2,1$

+0,7b

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} = \sqrt{0,25 - 0,16} = \sqrt{0,09} = 0,3$

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} - \frac{\sqrt[3]{125}}{8} = 300 + 4 - \frac{11}{8} - \frac{5}{8} =$

$= \frac{2400}{8} + \frac{32}{8} - \frac{22}{8} - \frac{5}{8} = \frac{2432}{8} - \frac{27}{8} = \frac{2405}{8}$

+0,4b

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} = (0,04 + 0,81) + 8 \cdot 12 = 0,85 + 96 = 96,85$

$1,1^2$ MECHE

−1b

B

881

A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 =$ ~~-1,81~~ $-3,61$ ← $1,9^2 = 3,61$ −0,76

b) $\sqrt{0,0036} + \sqrt[3]{0,008} =$ 0,06 + 0,2 = 0,26 ✓

c) $(-0,006)^2 + (-0,03)^3 =$ ~~36~~ 0,000036 + (−0,000027) =

d) $\sqrt{0,0196 \cdot 225} =$ ~~√11~~ 0,000009 ✓

= $\sqrt{0,14} \cdot \sqrt{15} = \sqrt{0,14 \cdot 15} = \sqrt{2,10}$ ODHOCMĚNO −0,3b

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} =$ 0,09 $\sqrt{0,25 - 0,16} = 0,3$ ✓

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} - \frac{\sqrt[3]{125}}{8} =$ $300 + 4 - \frac{11}{8} - \frac{5}{8} =$

16/8

$300 + \left(\frac{32}{8} - \frac{11}{8} - \frac{5}{8}\right) = 300 + 2 = 302$ ✓

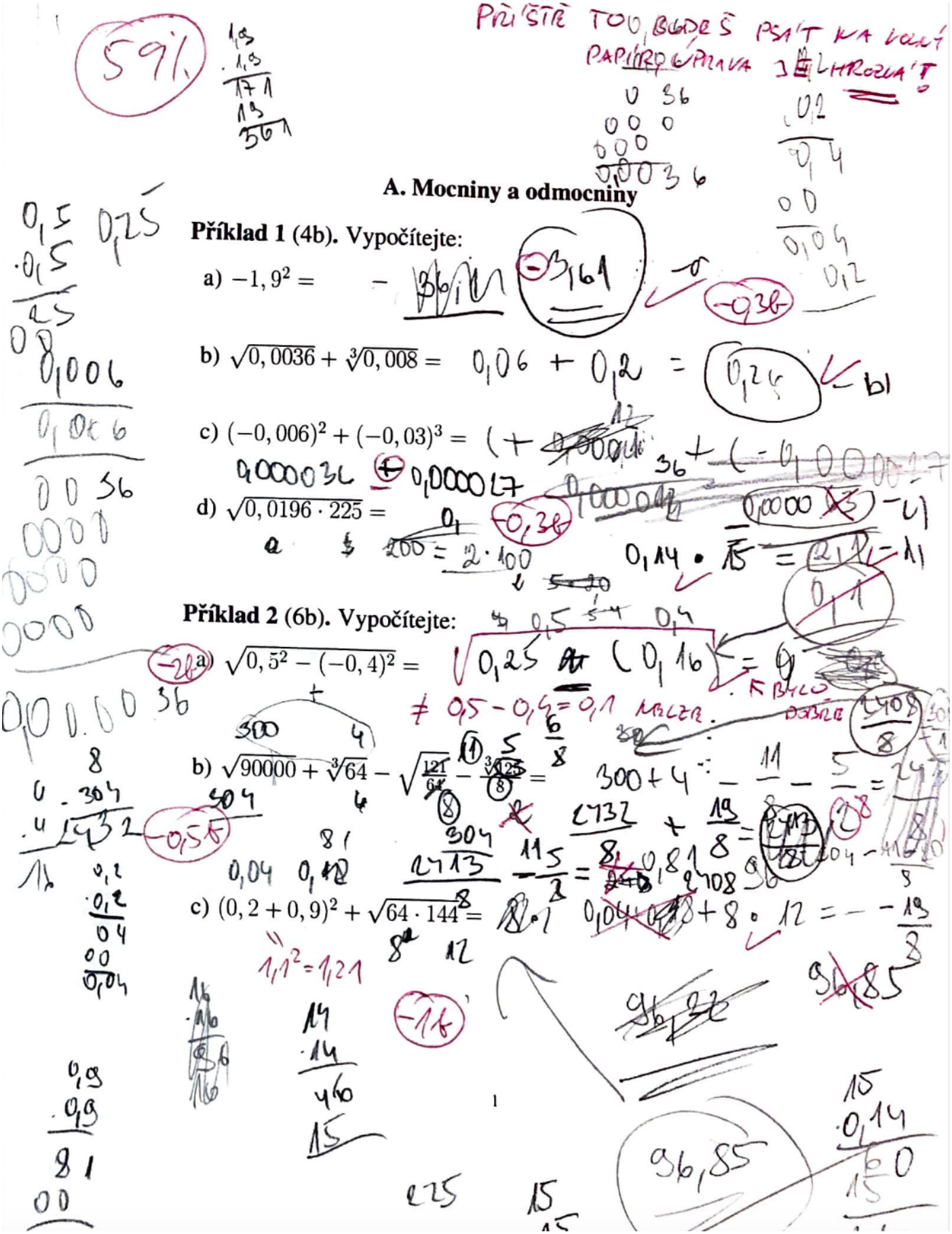
c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} =$ $(1,1)^2 + \sqrt{4^3 \cdot 12^2} = 1,21 +$

8 · 12

$\sqrt{64} \cdot \sqrt{144} = 1,21 + 196 =$ ~~19~~ 7,21 ✓

−0,2b

C



A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 =$

b) $\sqrt{0,0036} + \sqrt[3]{0,008} =$

c) $(-0,006)^2 + (-0,03)^3 =$

d) $\sqrt{0,0196 \cdot 225} =$

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} =$

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} - \sqrt[3]{\frac{125}{8}} =$

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} =$

D

881.

A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 = 19^2 = -361$

b) $\sqrt{0,0036} + \sqrt[3]{0,008} = 0,06 + 0,2 = 0,26$

c) $(-0,006)^2 + (-0,03)^3 = 0,000036 + (-0,000027) = 0,000009$

d) $\sqrt{0,0196 \cdot 225} = \sqrt{0,14} \cdot \sqrt{225} = 15 = 1,10$

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} = \sqrt{0,25 - 0,16} = \sqrt{0,09} = 0,3$

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} - \frac{\sqrt[3]{125}}{8} = 300 + 6 - \frac{11}{8} - \frac{5}{8} = \frac{2437}{8} - \frac{5}{8} = \frac{2432}{8} = 304$

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} =$

$(1,1)^2 + 8 \cdot 12 = 121 + 96 =$

$= 121 + 8 \cdot 12 = 121 + 96 = 97,21$

$\frac{2437}{8} - \frac{5}{2} = \frac{2437 - 20}{8} = \frac{2417}{8}$

$2417 : 8 = 302,1$

E

- 0,625
302,375
5

15 · 0,14
60
15
2,10

92%

A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

11 · 11 = 121 ✓

a) $-1,9^2 = -3,61$ ✓

b) $\sqrt{0,0036} + \sqrt[3]{0,008} = 0,06 + 0,2 = 0,26$ ✓

c) $(-0,006)^2 + (-0,03)^3 = 0,000036 - 0,000027 = 0,000063$ −0,36

d) $\sqrt{0,0196 \cdot 225} = \sqrt{0,0196} \cdot \sqrt{225} = 0,14 \cdot 15 = 2,1$ ✓

Příklad 2 (6b). Vypočítejte:

11 : 8 = 1,
30

a) $\sqrt{0,5^2 - (-0,4)^2} = \sqrt{0,25 - 0,16} = \sqrt{0,09} = 0,3$ ✓

6 : 8 = 0,625
60
20
40
0

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} - \frac{\sqrt[3]{125}}{8} = 300 + 4 - \frac{11}{8} - \frac{5}{8} =$

304 : 8
2432

$= \frac{304}{1} - \frac{16}{8} = \frac{2426}{8} =$

2426 / 8

$= 303,25$

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} = 1,1^2 + 96 =$

8 · 12
· 8
96

$= 0,0121 + 96 = 96,0121$

s chybou

−0,56

24,26 : 8 = 3,03
02
26

F

A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 = -3,61$

b) $\sqrt{0,0036} + \sqrt[3]{0,008} = 0,06 + 0,2 = 0,26$

c) $(-0,006)^2 + (-0,03)^3 = 0,000036 - 0,000027 = 0,000009$

d) $\sqrt{0,0196 \cdot 225} = \sqrt{0,0196} \cdot \sqrt{225} = 0,14 \cdot 15 = 2,10$

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} = \sqrt{0,25 - 0,16} = \sqrt{0,09} = 0,3$

b) $\sqrt{90000} + \sqrt[4]{64} - \sqrt{\frac{121}{64}} - \frac{\sqrt[3]{125}}{8} = 300 + 4 - \frac{11}{8} - \frac{5}{8} = 304 + \frac{7}{8} =$

$= 304 + 8,75 = 312,75$

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} = 1,1^2 + \sqrt{64} \cdot \sqrt{144} = 1,21 + 8 \cdot 12 = 1,21$

G

81.

A. Mocniny a odmocniny

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 =$ 2,61 −3,61 (−1b)

b) $\sqrt{0,0036} + \sqrt[3]{0,008} =$ 0,06 + 0,2 = 0,26 ✓

c) $(-0,006)^2 + (-0,03)^3 =$ 0,000 036 + (−0,000 027) = 0,000 009 ✓

d) $\sqrt{0,0196 \cdot 225} =$ $\sqrt{0,0196} \cdot \sqrt{225}$ = 0,14 · 15 = 2,10 ✓

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} =$ $\sqrt{0,25 - 0,16}$ = $\sqrt{0,09}$ = 0,3 ✓

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} - \frac{\sqrt[3]{125}}{8} =$ 300 + 4 − $\frac{11}{8}$ − $\frac{5}{8}$ = 304 − $\frac{16}{8}$ =

304 − $\frac{3}{4}$ = 304 − 0,75 = ~~303,25~~

$-\frac{16}{8}$ (−0,4b)

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} =$ 1,1² + (8) · 12 = 1,1² + 48 = 1,21 + 48 =

~~49,21~~

(−0,5b)

← Tento sněhulák chrání test před špatnými známkami

ÚKOL SPLNIL ✓

H

1. A.

A. Mocniny a odmocniny

811

Příklad 1 (4b). Vypočítejte:

a) $-1,9^2 =$ ~~[illegible]~~ $-3,61$

b) $\sqrt{0,0036} + \sqrt[3]{0,008} = 0,06 + 0,2 = 0,26$

c) $(-0,006)^2 + (-0,03)^3 =$ ~~[illegible]~~ $-0,5b$

$= 36 + (-0,000\,027) = 36 - 0,000\,027 = 35,999\,973$

d) $\sqrt{0,0196 \cdot 225} = \sqrt{0,0196} \cdot \sqrt{225} = 0,14 \cdot 15 = 2,1$

Příklad 2 (6b). Vypočítejte:

a) $\sqrt{0,5^2 - (-0,4)^2} =$ ~~[illegible]~~

$= \sqrt{0,25 - 0,16} = \sqrt{0,09} = 0,3$

b) $\sqrt{90000} + \sqrt[3]{64} - \sqrt{\frac{121}{64}} \cdot \frac{\sqrt[3]{125}}{8} =$ ~~[illegible]~~ $300 + 4 - \frac{\sqrt{121}}{\sqrt{64}} \cdot \frac{5}{8} =$

$= 300 + 4 - \frac{11}{8} \cdot \frac{5}{8} = \frac{300}{1} + \frac{4}{1} - \frac{6}{8_2} = \frac{300 + 1 - 6}{2} =$

c) $(0,2 + 0,9)^2 + \sqrt{64 \cdot 144} = \frac{301 - 6}{2} = \frac{295}{2} = 147,5$ -0,4b

$= 1,1^2 + \sqrt{64} \cdot \sqrt{144} = 1,21 + 8 \cdot 12 = 1,21 + 96 =$

$= 107,11$

-1b

1

a) $\int_1^2 \frac{1-\sqrt{x}}{2x}\,dx = \int_1^2 \frac{1-x^{\frac{1}{2}}}{2x}\,dx = \int_1^2 \frac{1}{2}\frac{1}{x} - \frac{x^{\frac{1}{2}}}{2x}\,dx = \int_1^2 \frac{1}{2x} - \frac{1}{2\sqrt{x^3}}\,dx$

$\left[\frac{1}{2}\ln|x| - \frac{2}{3}x^{\frac{3}{2}}\right]_1^2 = \left(\frac{1}{2}\ln 2 - \frac{2}{3}\sqrt{2^3}\right) - \left(\frac{1}{2}\ln 1 - \frac{2}{3}\right) = \frac{1}{2}\ln 2 - \frac{4\sqrt{2}}{3} + \frac{2}{3}$

b) $\int \frac{3x}{x^2+1}\,dx = \frac{3}{2}\int \frac{1}{x^2+1}\,2x\,dx$

$x^2+1 = t$

$2x\,dx = dt$

$\frac{3}{2}\int \frac{1}{t}\,dt = \frac{3}{2}\ln|t| + C$

$\frac{3}{2}\ln|x^2+1| + C, \quad C \in \mathbb{R}$

c) $\int e^x\cdot(x+5)\,dx = \begin{vmatrix} u' = e^x & v = x+5 \\ u = e^x & v' = 1 \end{vmatrix} \Rightarrow uv - \int uv'$

$e^x(x+5) - \int e^x\,dx$

$= e^x(x+5) - e^x + C$

$= xe^x + 5e^x - e^x + C$

$C \in \mathbb{R}$

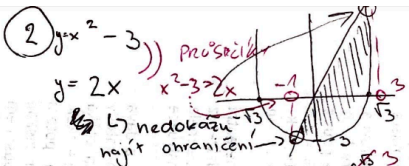
2) $y = x^2 - 3$

$y = 2x$

$x^2 - 3 = 2x$

$x^2 - 2x - 3 = 0$

$x = 3, \quad x = -1$



$\int_{-1}^{3} 2x - x^2 + 3\,dx = \left[x^2 - \frac{1}{3}x^3 + 3x\right]_{-1}^{3}$

$= \left(9 - \frac{1}{3}\cdot 27 + 9\right) - \left(1 + \frac{1}{3} - 3\right)$

$= 18 - 9 + \frac{2}{3} = 9\frac{2}{3}$

2

55%

Př. 1

a) $\int_1^2 \frac{1-\sqrt{x}}{2x}\,dx = \int_1^2 \frac{1-x^{\frac{1}{2}}}{2x}\,dx = \int_1^2 \frac{1-t^{\frac{1}{2}}}{2t} = \frac{1}{2}\int_1^2 \frac{1-t^{\frac{1}{2}}}{t}$

metoda substituce

$t = x$ NIC SE TÍM NEMĚNÍ

$dt = 1\,dx$

$dx = dt$

$= \frac{1}{2}\left| \frac{x - \frac{t^{\frac{3}{2}}}{\frac{3}{2}}}{\frac{t^1}{2}} \right|_1^2 = \frac{1}{2} - \left| \frac{x - \frac{2}{3}\sqrt{t^3}}{2t^2} \right|_1^2$

$\frac{1-x^{\frac{1}{2}}}{2x} \cdot 2x^{-1} = 1 -$

$-1 + \frac{1}{2}$

$-\frac{1}{2} + \frac{1}{2}$

$(1 - t^{\frac{1}{2}}) \cdot 2t^{-1}$

b) $\int \frac{3x}{x^2+1}\,dx = \int \frac{3x}{t} \cdot \frac{dt}{2x} = \frac{1}{2}\int \frac{3}{t}\,dt = \frac{3}{2}\ln|t| = \frac{3}{2}\ln|x^2+1| + C$ ✓

$t = x^2+1$

$dt = 2x\,dx$

$\frac{dt}{2x} = dx$

1,5 b

c) $\int e^x (x+5)\,dx = \left| \begin{matrix} u' = e^x & v = x+5 \\ u = e^x & v' = 1 \end{matrix} \right|$ m.p.p.

$= e^x \cdot (x+5) - \int e^x \cdot 1\,dx = e^x(x+5) - e^x + C$

$= e^x x + 5e^x - e^x + C = e^x x + 4e^x + C$ ✓

3 b

$\int_1^2 \frac{1-\sqrt{x}}{2x}\,dx = \int_1^2 \frac{1-x^{\frac{1}{2}}}{2x}\,dx = \int_1^2 [\quad]$

$t = x$

$dt = 1\,dx$

$dx = dt$

$\int_1^2 \left[(2x)^{-1} \cdot (1 - x^{\frac{1}{2}})\right] =$

$= \int_1^2 \left[\frac{1}{2}x^{-1} - \frac{1}{2}x^{-1} \cdot x^{\frac{1}{2}}\right] = \int_1^2 \left[\frac{1}{2}x^{-1} - \frac{1}{2}x^{-\frac{1}{2}}\right]$

$= \left[\frac{1}{2}t^{-1} - \frac{1}{2}t^{-\frac{1}{2}}\right]_1^2 \to \left[\text{integrovat}\right]_1^2 =$ ✓ POSTUP

↑ z dělit o mínus

dosadit 2 a 1 ✓

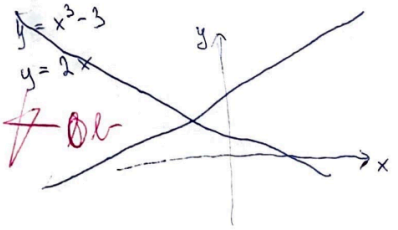
1b

$\int_1^2 \frac{1x - \frac{x^{\frac{3}{2}}}{\frac{3}{2}}}{2\frac{x^2}{2}} = \frac{2 - \frac{2}{3}\sqrt{2^3}}{2^{\frac{4}{2}}} - \frac{1 - \frac{2}{3}\sqrt{1^3}}{2^{\frac{1}{2}}}$

$= \frac{2 - \frac{2}{3}\sqrt{8}}{4} - \frac{1 - \frac{2}{3}}{1} = \frac{\frac{4}{3}\sqrt{8}}{4} - \frac{\frac{1}{3}}{1}$

$= \frac{\frac{4\sqrt{2}}{3}}{4} - \frac{1}{3} = \frac{8\sqrt{2}}{12} - \frac{1}{3} = \frac{8\sqrt{2}}{12} - \frac{4}{12}$

$= \frac{8\sqrt{2} - 4}{12}$



0 b

3, 4

Integrální počet A (80%)

① a) $\int_1^2 \frac{1-\sqrt{x}}{2x}\,dx = \int_1^2 \frac{1-x^{\frac{1}{2}}}{2x}\,dx = \left| \begin{matrix} 1-x^{\frac{1}{2}} = t \\ t' = dt \\ dt = -\frac{1}{2}x^{-\frac{1}{2}}dx \\ \frac{1}{2}\frac{1}{\sqrt{x}} \end{matrix} \right| = \int_{1-\sqrt{2}} \frac{t}{2x}\,\frac{2dt\sqrt{x}}{1} = \int_{1-\sqrt{2}}^{0} \frac{t\sqrt{x}}{x}\,dt =$ ✗

$dx = \frac{dt}{\frac{1}{2\sqrt{x}}}$

x	1	2
t	0	$1-\sqrt{2}$

(DOLE)

INTEGRACE $[\ldots x \ldots]_{1-\sqrt{2}}^{0} \ldots (0-(1-\sqrt{2}))\ldots$ ✓

0,8b

b) $\int \frac{3x}{x^2+1}\,dx = \left| \begin{matrix} t = x^2+1 \\ dt = 2x\,dx \\ dx = \frac{dt}{2x} \end{matrix} \right| = \int \frac{3x}{t}\cdot\frac{dt}{2x} = \frac{3}{2}\int \frac{1}{t}\,dt = \frac{3}{2}\ln t = \frac{3}{2}\ln|x^2+1|$ ✓

2b

c) $\int e^x\cdot(x+5)\,dx = \left| \begin{matrix} u' = e^x & v = x+5 \\ u = e^x & v' = 1 \end{matrix} \right| = e^x(x+5) - \int e^x\,dx = e^x(x+5) - e^x = xe^x + 5e^x - e^x =$

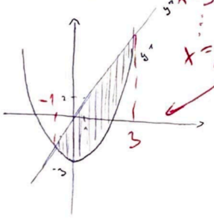
$= xe^x + 4e^x + C = e^x(x+4) + C$ ✓

3b

② $y = x^2-3,\ y = 2x$ → PRŮSEČÍKY

$x^2-3 = 2x$

$x = ?$



$S = \int_{-1}^{3} (2x-(x^2-3))\,dx = \int (2x-x^2+3)\,dx = \int 2x\,dx - \int x^2\,dx + \int 3\,dx$

$= \left[\frac{2x^2}{2} - \frac{x^3}{3} + 3x\right]_{-1}^{3} = \frac{3x^2}{3} - \frac{x^3}{3} + C = \frac{3x^2-x^3}{3} + C =$

$= \frac{x^2(3-x)}{3} + C$

− MEZE ✗

− INTEGRACE ✓

2b

1 a)

$\frac{1}{2}\int_1^2 \frac{1}{x}\,dx \qquad \frac{1}{2}\int_1^2 x^{-\frac{1}{2}}\,dx \qquad \frac{1}{2}\cdot\frac{x^{1/2}}{1/2}$

$= \int_1^2 \frac{1}{2x} - \frac{2\sqrt{x}}{2x}\,dx = \int_1^2 \frac{1}{2x} - \int_1^2 \frac{1}{2\sqrt{x}}\,dx = \left[\frac{1}{2}\ln x\right]_1^2 - \left[\ln 2\sqrt{x}\right]_1^2 =$

1b $= (\ln 4 - \ln 2) - (\ln 2\sqrt{2} - \ln 2) = \ln 4 - \ln 2\sqrt{2}$

---

① Ⓐ

(1) $\int_1^2 \frac{1-\sqrt{x}}{2x}\,dx = \frac{1}{2}\int_1^2 \frac{1-x^{1/2}}{x} = \frac{1}{2}\left(\int_1^2 \frac{1}{x}\,dx - \int_1^2 \frac{x^{1/2}}{x}\,dx\right) = \frac{x^{\frac{1}{2}}}{\frac{1}{2}}$

$\frac{1}{x^{1/2}} = \int x^{-\frac{1}{2}}\,dx$

$[\ln|x|]_1^2$ ✗ CHYBÍ INTEGRACE

PRVNÍ DOSAZENÍ

$= \frac{1}{2}\left(\left[\frac{1}{1} - \frac{1}{4}\right]_1^2 - \left[\frac{2^{3/2}}{2^{3/2}} - \frac{1}{2\cdot 2^{1/2}}\right]_1^2\right) = \frac{1}{2}\left(1 - \frac{1}{2} - 1 + \frac{1}{2^{3/2}}\right)$

− DOSAZENÍ S CHYBOU

$= -\frac{1}{4} - \frac{1}{2}\cdot\frac{1}{2^{3/2}} - \frac{1}{4} - \frac{1}{2^{5/2}} = -\frac{1}{2} - \frac{1}{2^{5/2}}$ 1b

b) $\frac{3}{2}\int \frac{2x}{x^2+1}\,dx = \frac{3}{2}\ln|x^2+1| + C$ 1b

$(x^2+1)' = 2x$

67%

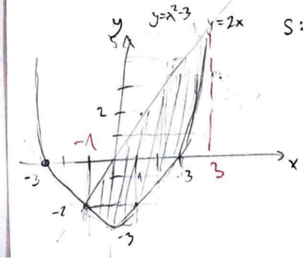
c) $\int e^x\cdot(x+5)\,dx = \left| \begin{matrix} t = x+5 \\ dt = dx \end{matrix} \right| = \int e^{t-5}\cdot t\,dt = \left| \begin{matrix} u' = e^{t-5} & v = t \\ u = e^{t-5} & v' = 1 \end{matrix} \right| =$

$x = t-5$

$= te^{t-5} - \int e^{t-5}\,dt = te^{t-5} - e^{t-5} + C = (x+5)e^x - e^x + C$ ✓ 3b

$(x+4)e^x$

② $y = x^2-3 \qquad y = 2x$



S: $\int_{-1}^{3} (2x-(x^2-3))\,dx = \int (2x-x^2+3)\,dx =$ ✗ INTEGRACE A PAK DOSAZENÍ

např.: $\int -(x^2-2x-3) = -(x+1)(x-3)$

$= -\left[(-2+1)(-2-3) - (5+1)(5-3)\right]_{-2}^{5} =$

$= -7 \cdot 2$

1,7b

5

1. a) $\int_1^2 \left(\frac{1}{2x} - \frac{\sqrt{x}}{2x}\right) dx = \int_1^2 \left(\frac{1}{2x} - \frac{x^{\frac{1}{2}}}{2x^{\frac{1}{2}}}\right) dx$ $\frac{dx}{x} = \ln|x|$ ✓ (4,7)

$\frac{1}{2}\int_1^2 \frac{1-\sqrt{x}}{x} dx = \frac{1}{2}\int_1^2 \frac{1}{x} - \frac{1}{x^{\frac{1}{2}}} dx = \frac{1}{2}\left[\ln|x| - \frac{x^{\frac{1}{2}}}{\frac{1}{2}}\right]_1^2 = \not\!\!/$ $x^{-\frac{1}{2}}$

0,7 b

b) $\int \frac{3x}{x^2+1} dx = \left| \begin{matrix} t = x^2+1 \\ dt = 2x\,dx \\ dx = \frac{dt}{2x} \end{matrix} \right| = \int \frac{3x}{t} \cdot \frac{dt}{2x} = \int \frac{3}{2} \cdot \frac{dt}{t} = \frac{3}{2} \ln|x^2+1| + C$ ✓ 2b

c) $\int e^x \cdot (x+5)\, dx = \left| \begin{matrix} u' = e^x & v = x+5 \\ u = e^x & v' = 1 \end{matrix} \right| = e^x (x+5) - \int e^x \cdot 1\, dx = e^x$ ✓ chybný integrál

$e^x - \int e^x \cdot 1\, dx = e^x - e^x = 1 - 1;$ $+C$

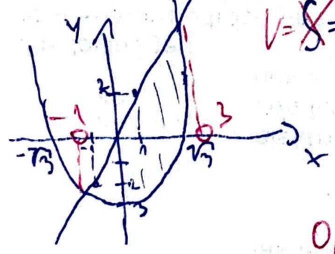
1,5 b

průsečíky: $x^2 - 3 = 2x$ → $x = \not\!\!/$

(2.) $y = x^2 - 3$ → $x^2 - 3 = 0$, $x^2 = 3$, $x = \sqrt{3}$

$y = 2x$

OBSAH



$V = S = \pi \int_a^b f^2_{(x)} - \int_a^b f^2_{(g)}$

$S = \pi \int_a^b (x^2-3)^2 - \int (2x)^2 = \left[\frac{(x^2-3)^3}{3}\right]_0^{\sqrt{3}} - \left[\frac{(2x)^3}{3}\right]$

0,5 b

6

a) $\int_1^2 \frac{x\sqrt[5]{x}}{2\sqrt{x}}\,dx = \int_1^2 \frac{x^{\frac{6}{5}+\frac{1}{4}-\frac{2}{4}}}{2}dx = \frac{1}{2}\int_1^2 x^{\frac{3}{5}}dx = \frac{1}{2}\left[\frac{5x^{\frac{8}{5}}}{8}\right]_1^2 =$

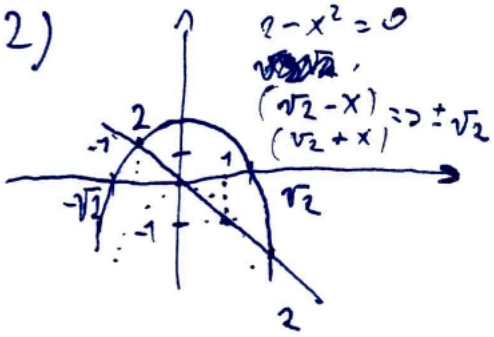
$\frac{1}{2}\cdot\frac{5\cdot 2^{\frac{8}{5}}}{8} - \frac{1}{2}\cdot 5\cdot\frac{1^{\frac{8}{5}}}{8} = \frac{2}{8}\cdot 2^{\frac{8}{5}} - \frac{2}{8}\cdot 1^{\frac{8}{5}}$ ✓ 2b

b) $\int \frac{x}{x^2+1}\,dx = \frac{1}{2}\int \frac{2x}{x^2+1}dx = \frac{1}{2}\ln|x^2+1| + C$ ✓ 2b

c) $\int 5x\cos x\,dx = 5\left|\begin{matrix} u' = \cos x & v = x \\ u = \sin x & v' = 1 \end{matrix}\right| =$

$5(\sin x\cdot x - \int \sin x\,dx) = 5(\sin x\cdot x + \cos x) + C$ ✓ 3b

2)



$2-x^2 = 0$

$(\sqrt{2}-x)(\sqrt{2}+x) \Rightarrow \pm\sqrt{2}$

$y_1 = y_2$

$2-x^2 = -x$

$-x^2+x+2=0$

$(x+2)(x-1)=0$

$-2 \quad 1$

$x^2+x-2=0$

$(x-2)(x+1)$

$2 \quad -1$ ✓

$S = \int_{-1}^{2}[\sqrt{2}-x^2-(-x)]\,dx$

$S = \int_{-1}^{2}(2-x^2+x)\,dx$

$S = \left[2x - \frac{x^3}{3} + \frac{x^2}{2}\right]_{-1}^{2}$

$S = 4 - \frac{8}{3} + \frac{4}{2} - \left(-2 + \frac{1}{3} - \frac{1}{2}\right)$

$S = 4 - \frac{8}{3} + \frac{4}{2} + 2 - \frac{1}{3} + \frac{1}{2}$

$S = 8 - 3 + \frac{1}{2} = 5{,}5\ j^2$

$4{,}5\ j^2$

2,9b

7