Exc. zlomky

$\frac{3}{y^2} = 3y^{-2}$ $\quad y = x^2 - 6x + 11$, $dy = 2x - 6$ $\quad \int \frac{1}{2} \frac{1}{y}\, dy$

$$\int x + \frac{-2}{x-2} + \frac{3}{(x-2)^2} + \frac{1}{2}\frac{2x-6}{x^2-6x+11} + \frac{-4}{x^2-6x+11}\, dx$$

$$= \frac{x^2}{2} + -2\ln|x-2| + 3\cdot\frac{-1}{x-2} + \frac{1}{2}\ln|x^2-6x+11| - 2\sqrt{2}\arctan \quad \overset{x-3}{=\sqrt{2}}$$

$x^2 - 6x + 11 = (x-3)^2 + 2$

$2\left(\left(\frac{x-3}{\sqrt{2}}\right)^2 + 1\right)$

$$\int_2 \frac{-4}{\left(1 + \left(\frac{x-3}{\sqrt{2}}\right)^2\right)}\, dx = -2\cdot\sqrt{2}\arctan\left(\frac{x-3}{\sqrt{2}}\right)$$

$$\int \frac{x^5 - 10x^4 + 38x^3 - 60x^2 + 12x + 49}{(x^2-4x+4)(x^2-6x+11)}\, dx$$

$\int \frac{P(x)}{Q(x)}$

$x^4 - 10x^3 + 39x^2 - 68x + 44$

(1) $\quad st\,P \overset{?}{<} st\,Q$

$5 \;\dot{:}\; 4$

$(x^5 - 10x^4 + 38x^3 - 60x^2 + 12x + 49) : (x^4 - 10x^3 + \dots + 44) = x$

zkratka

$x^5 + (-10x^4 + 39x^3 - 68x^2 + 44x) + 10x^4 - 39x^3 + 68x^2 - 44x$

$-10x^4 + 38x^3 - 60x^2 + 12x + 49$

$$\int x + \frac{-x^3 + 8x^2 - 32x + 49}{(x^2-4x+4)(x^2-6x+11)}\, dx$$

(2) $\quad (x-2)^2(x^2-6x+11)$

(3) $$\int \frac{-x^3 + 8x^2 - 32x + 49}{(x-2)^2(x^2-6x+11)}\, dx = \int \frac{\overset{A}{-2}}{(x-2)} + \frac{\overset{B}{3}}{(x-2)^2} + \frac{\overset{Cx+D}{x-2}}{x^2-6x+11}\, dx$$

$$\frac{A(x-2)(x^2-6x+11) + B(x^2-6x+11) + (Cx+D)(x-2)^2}{(x-2)^2(x^2-6x+11)}$$

$$= \frac{-x^3 + 8x^2 - 32x + 49}{(x-2)^2(x^2-6x+11)}$$

- $x = 2$
- $x = 0$
- $x = 1$
- $x = 3$

$0 + B \cdot 3 + 0 = 9$ $\quad B = 3$

$-22A + 3 \cdot 11 + 4D = 49$

$-6A + 18 + C + D = 24$

$24 + 6 + 3C + D = -2$

$A = -2$

$C = 1$

$D = -7$