Nový nadpis 27.3.2013

$$I_n = \cos^{n-1} x \sin x + (n-1)\int \cos^{n-2} x\,(1-\cos^2 x)\,dx$$

$$= \cos^{n-1} x \sin x + (n-1) I_{n-2} - (n-1) I_n$$

$$n I_n = \cos^{n-1} x \sin x + (n-1) I_{n-2}$$

$$I_2 = \frac{1}{2}\left(\cos x \sin x + x\right)$$

$\boxed{6.52}$ $I = \int e^{\sqrt{x}}\,dx \quad x > 0.$

$$\left| \begin{array}{l} y = \sqrt{x} \\ dy = \frac{1}{2} x^{-1/2}\,dx \quad = y^{-1} \\ dx = 2y\,dy \end{array} \right| = 2\int e^{y} y\,dy = \left| \begin{array}{l|l} F' = e^{y} & F = e^{y} \\ G = y & G' = 1 \end{array} \right|$$

$$= 2\left(y e^{y} - \int e^{y} \right) = \underline{\underline{2\sqrt{x}\,e^{\sqrt{x}} - 2e^{\sqrt{x}} + C}}$$

$$\int \frac{3x^2+7x}{16x^3-7x+1}\,dx = ?$$

$$\frac{\boxed{4x+2}}{x^2+3x+2} = \frac{A}{x+1} + \frac{B}{x+2} = \frac{A(x+2)+B(x+1}{x^2+3x+2}$$

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

$$\Rightarrow \begin{array}{ll} A+B=4 & -A=2 \\ 2A+B=2 & B=6 \end{array}$$

1) reálné kořeny a_i násobnosti m_i

$$\Rightarrow \frac{f(x)}{g(x)} = \boxed{\frac{r_1(x)}{(x-a_1)^{m_1}}} + \dots + \frac{r_k(x)}{(x-a_k)^{m_k}}$$

spočtu $r_i(x)$ stejně jako výš!

$$\frac{r(x)}{(x-a)^n} = \frac{A_1}{x-a} + \frac{A_2}{(x-a)^2} + \dots + \frac{A_n}{(x-a)^n}$$

$$\frac{5x-16}{(x-2)^2} = 5\frac{x-2}{(x-2)^2} - 6\frac{1}{(x-2)^2} = \underbrace{5\frac{1}{x-2} - 6\frac{1}{(x-2)^2}}$$

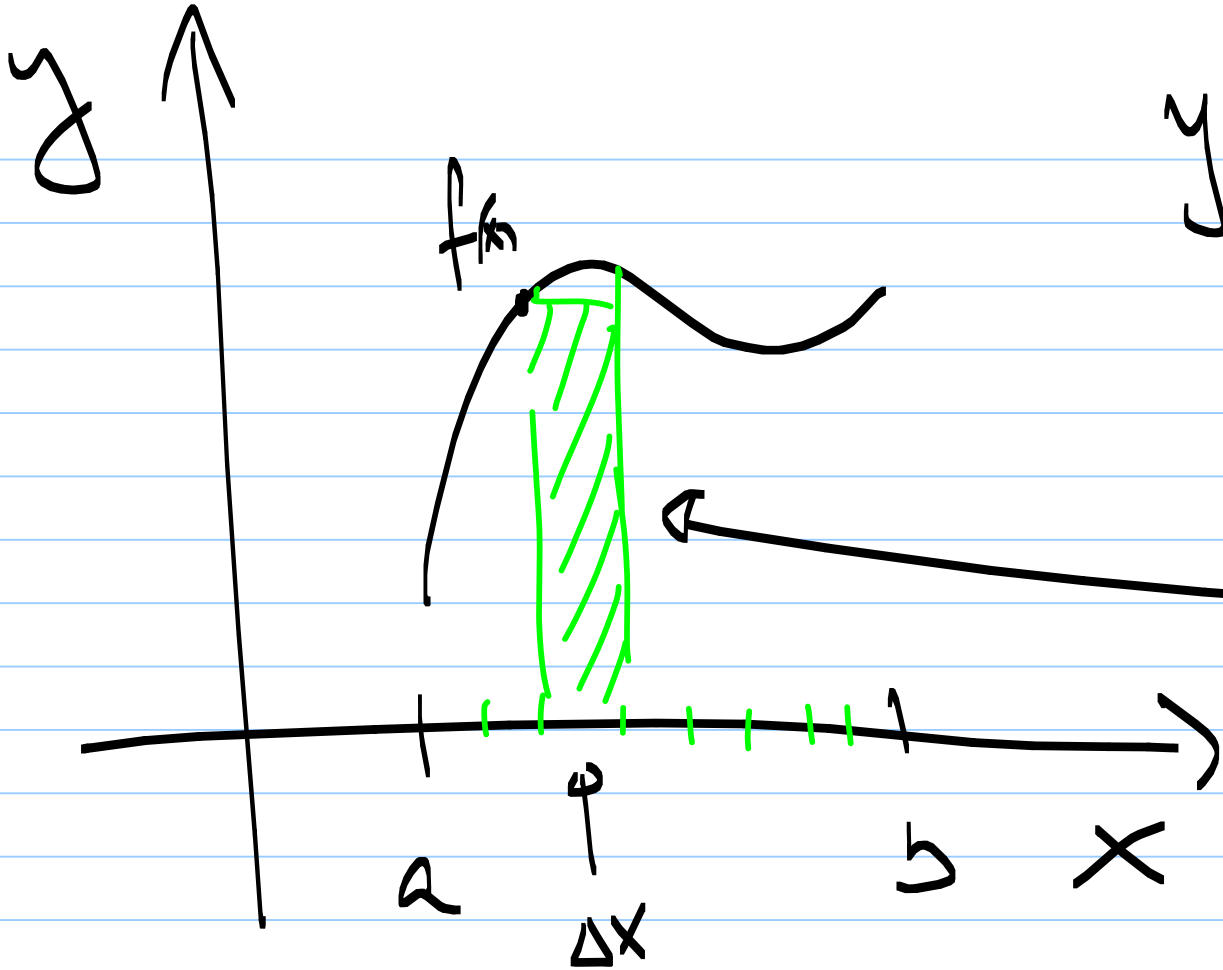
faktor a [illegible] $\boxed{(x-a)^2+b^2}$

$$\Rightarrow \quad \frac{Bx+C}{(x-a)^2+b^2}$$

n [illegible]:

$$\frac{A_1x+B_1}{(x-a)^2+b^2} + \frac{A_2x+B_2}{((x-a)^2+b^2)^2} + \ldots$$

$h = \frac{f(x)}{g(x)}$ Maple: $\underline{\text{convert}(h, \text{parfrac}, x)}$

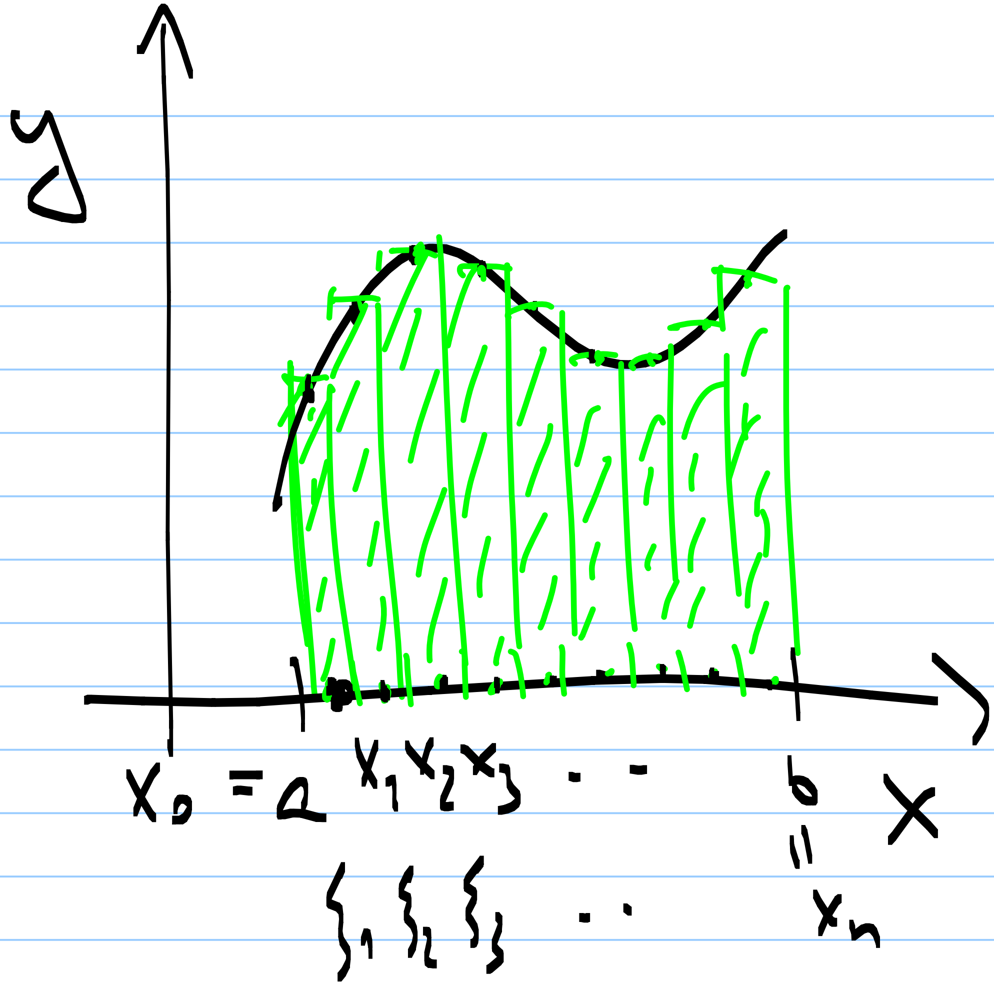


$$y = f(x) = F'(x)$$

$$f(x) \approx \frac{F(x+\Delta x) - F(x)}{\Delta x}$$

$$f(x) \cdot \Delta x \approx$$

$$\approx F(x+\Delta x) - F(x)$$

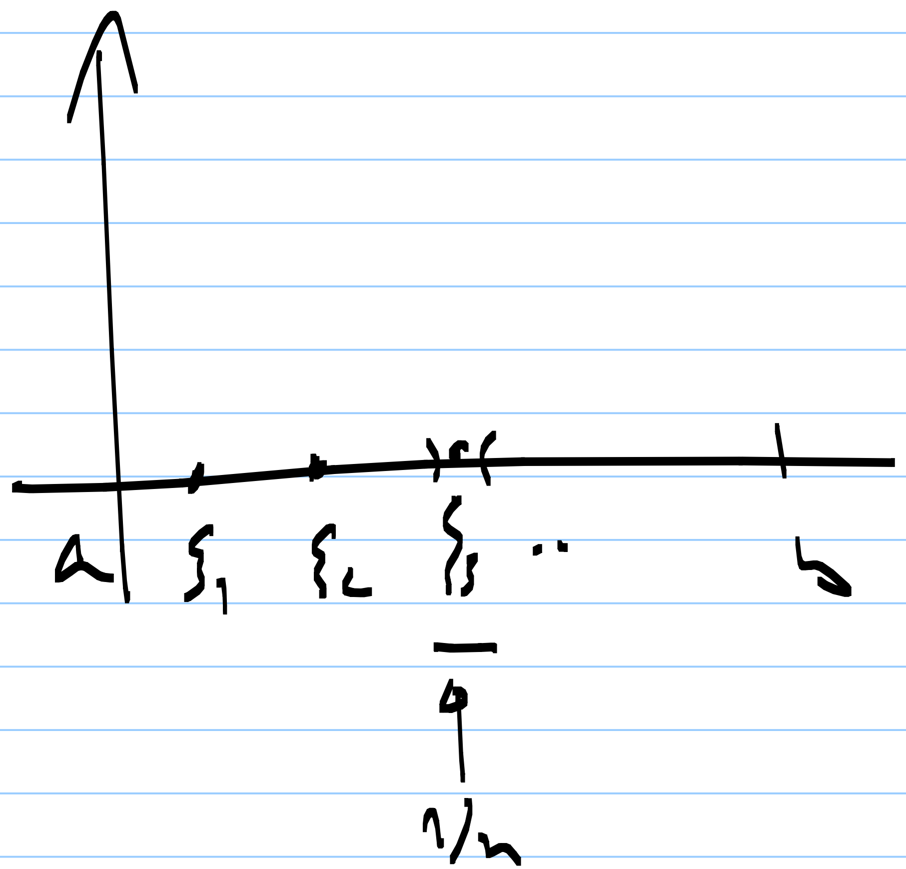


$$y = f(x)$$

$$S \approx \sum_{i=1}^{n} f(\xi_i)(x_i - x_{i-1})$$

$$\xi_i \in [x_{i-1}, x_i)$$

f nemărginită pe $[a, b]$



$$f(\xi_n) > n^2$$

Ismét, adott! R. int.

$\overline{\int} f(x)\,dx$: $\qquad S_{\Xi,\sup}$

$$S_{\Xi,\sup} = \sum_{i=1}^{n} \sup_{\xi\in[x_{i-1},x_i]} f(\xi)\cdot(x_i - x_{i-1})$$

$\underline{\int} f(x)\,dx$: $\qquad S_{\Xi,\inf}$

$$S_{\Xi,\inf} \le S_{\Xi,\xi} \le S_{\Xi,\sup}$$

$$S_{\sup} = \inf_{\Xi} S_{\Xi,\sup}$$

$$S_{\inf} = \sup_{\Xi} S_{\Xi,\inf}$$

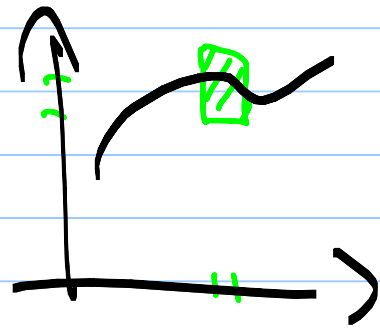
$\int_a^b f(x)\,dx$ ex. $\Leftrightarrow$ $\boxed{S_{sup} = S_{inf}}$

snaž se zjistit

Stejnoměrná spojitost.

$\forall \varepsilon > 0\ \exists \delta > 0\ |x - x_0| < \delta \Rightarrow |f(x) - f(x_0)| < \varepsilon$

na celém intervalu $[a,b]$.



$\nearrow$ silnější spojitost.