RIEŠENIE NIEKTORÝCH VÝPOČTOVÝCH ÚLOH V PROSTREDÍ MS MATHEMATICS

ÚLOHA

Vypočítajme v MS Mathematics nasledovné typy úloh (príkladov);

a) $\lim_{x\to-\infty}\frac{7x^2+2}{2x^2-x-6}$

b) $\lim_{n\to\infty}\left(\frac{n^2+6}{n^2}\right)^{n^2}$

c) $\int \ln x\ dx$

d) $\int_0^4 x\sqrt{x^2+9}\ dx$

e) $\int_{-\infty}^0 e^{3x}\ dx$

f) $\int_{-1}^1 \frac{5}{x}\ dx$

g) $\sum_{n=1}^{\infty}\left(\frac{1}{3}\right)^n$

h) $\sum_{n=1}^{\infty}\frac{1}{n}$

i) $\rho=?,\ \sum_{n=0}^{\infty}\frac{5^n x^n}{(n+1)^2}$

j) $\mathbf{A}\cdot\mathbf{B}=?,\ \mathbf{A}=\begin{pmatrix}177 & 135 & 136\\ 129 & 84 & 113\\ 123 & 113 & 76\end{pmatrix},\ \mathbf{B}=\begin{pmatrix}20\\25\\40\end{pmatrix}$

k) $h(\mathbf{A})=?,\ \mathbf{A}^{-1}=?,\ \mathbf{A}=\begin{pmatrix}1 & 0 & 2\\ 2 & 1 & -1\\ 1 & 1 & -2\end{pmatrix}$

l) $|\mathbf{A}|=?,\ \mathbf{A}=\begin{pmatrix}4 & -1 & -1\\ -1 & 2 & 0\\ -1 & 0 & 0\end{pmatrix}$

m) $x_1, x_2, x_3=?,\ \begin{aligned}1x_1+1x_2+1x_3&=5\\ 1x_1+2x_2+3x_3&=8\\ 1x_1+3x_2+5x_3&=11\end{aligned}$

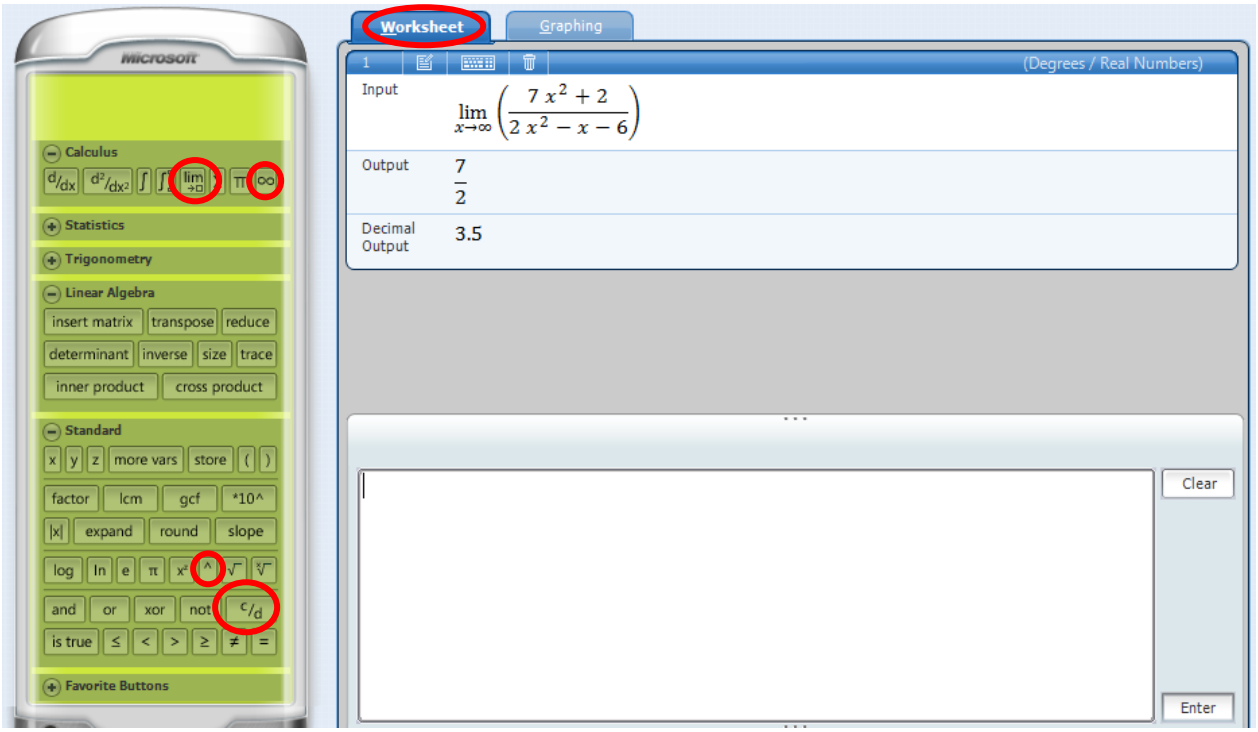
INŠTALÁCIA

https://www.microsoft.com/en-us/download/details.aspx?id=15702

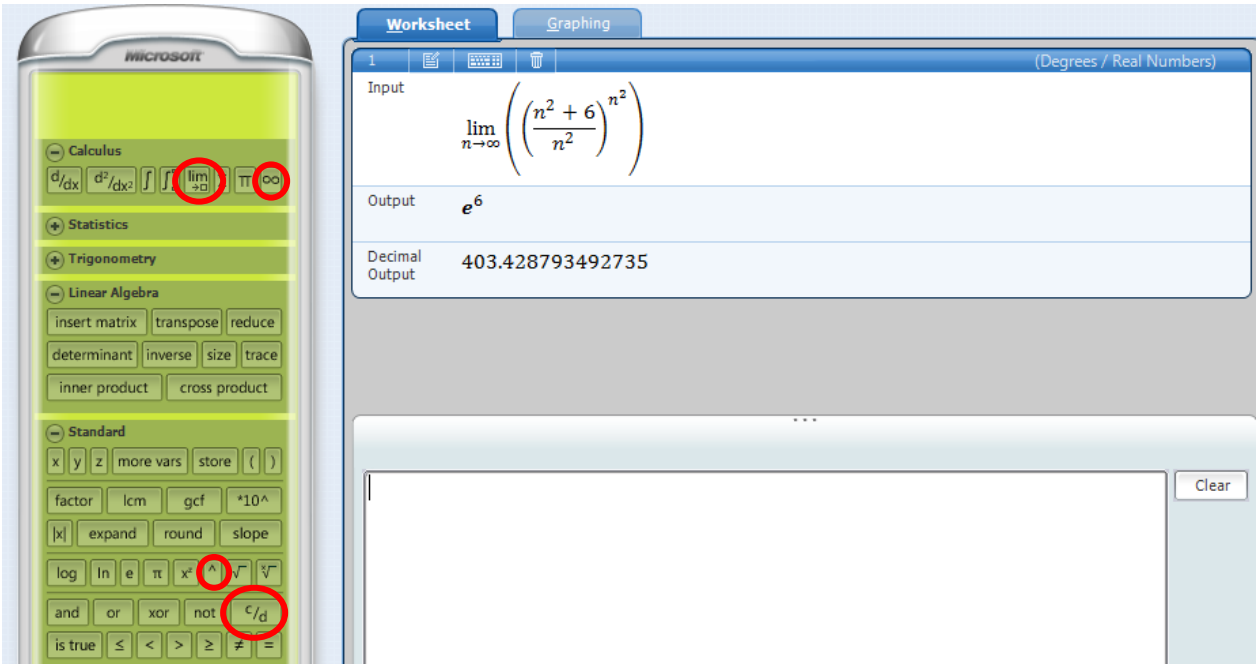
RIEŠENIE

(červenou farbou si vyznačené využité ovládacie prvky v danej úlohe (príklade))

a) $\lim_{x\to-\infty}\dfrac{7x^2+2}{2x^2-x-6}$

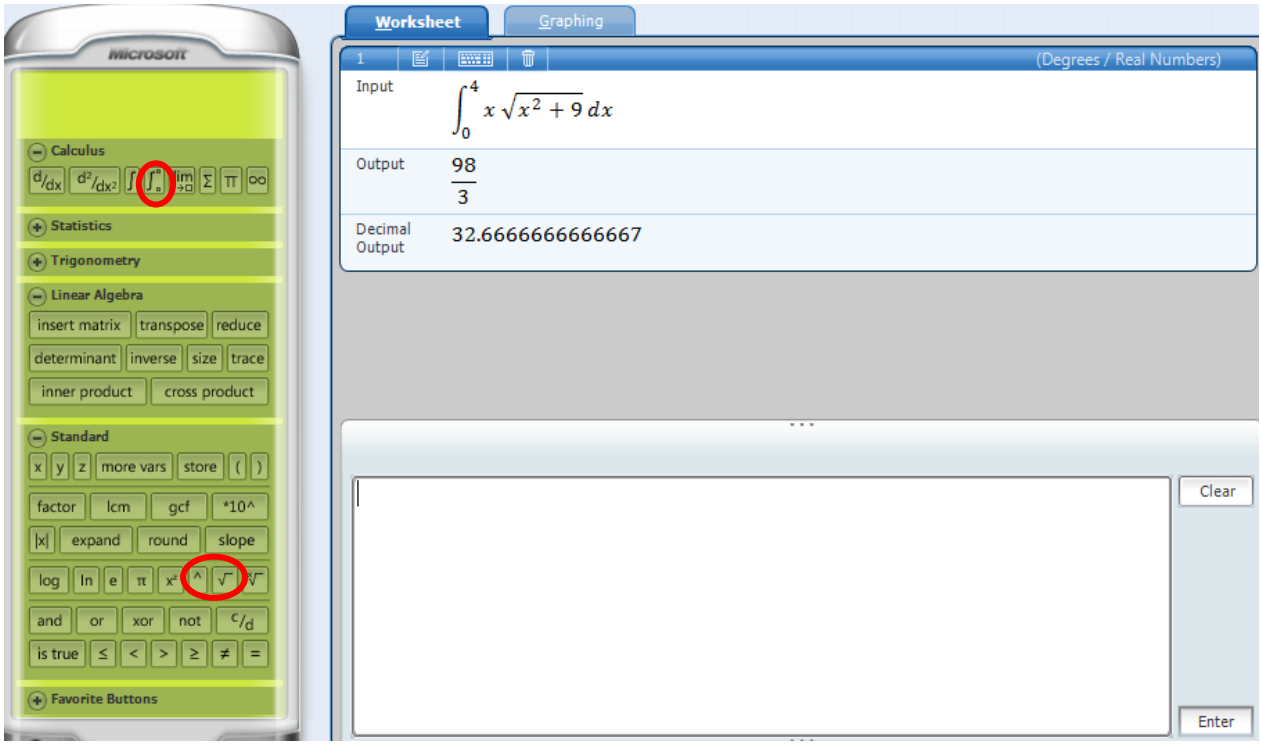


b) $\lim_{n\to\infty}\left(\dfrac{n^2+6}{n^2}\right)^{n^2}$

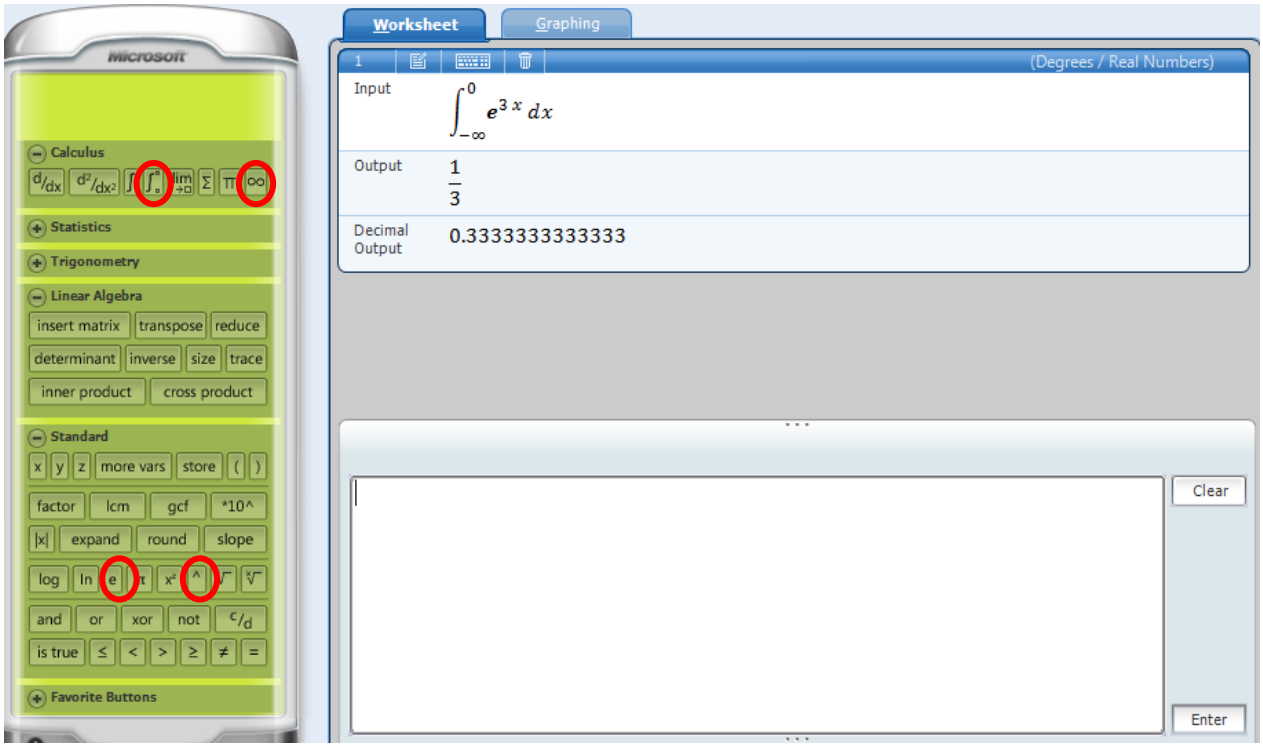


c) $\int \ln x \, dx$

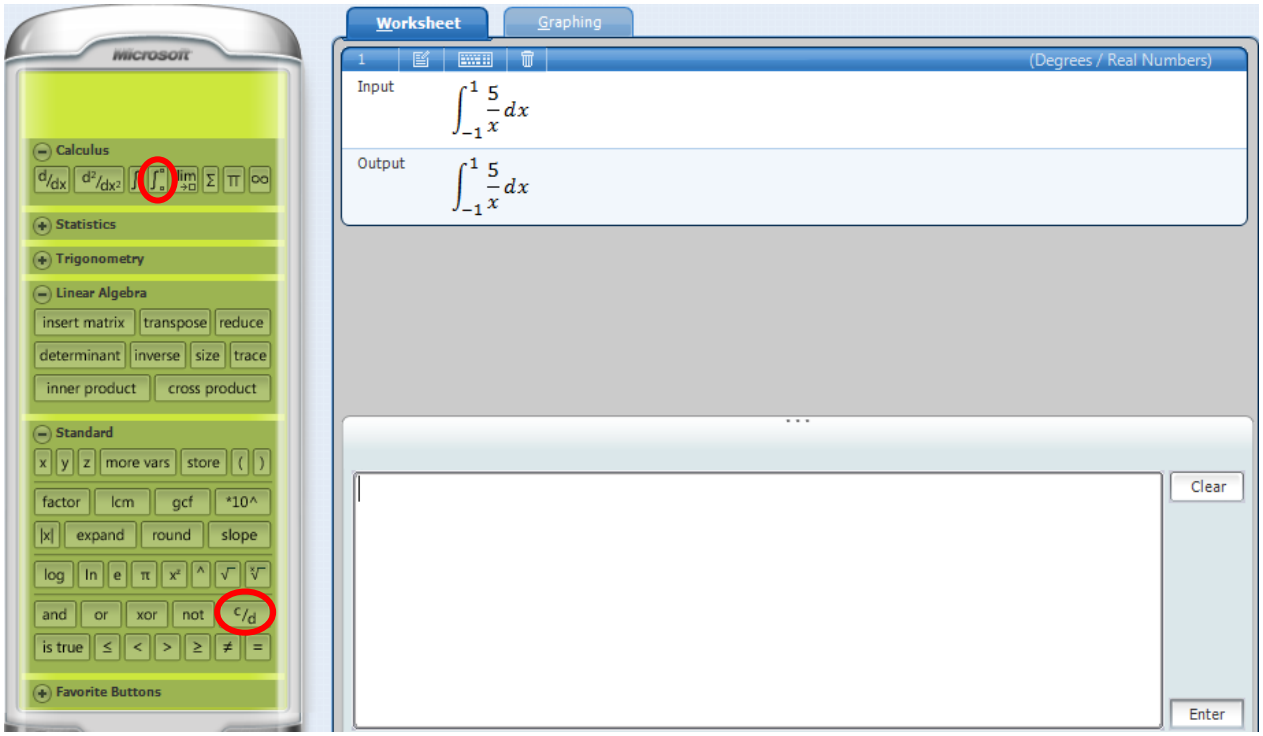
d) $\int_0^4 x\sqrt{x^2+9}\,dx$



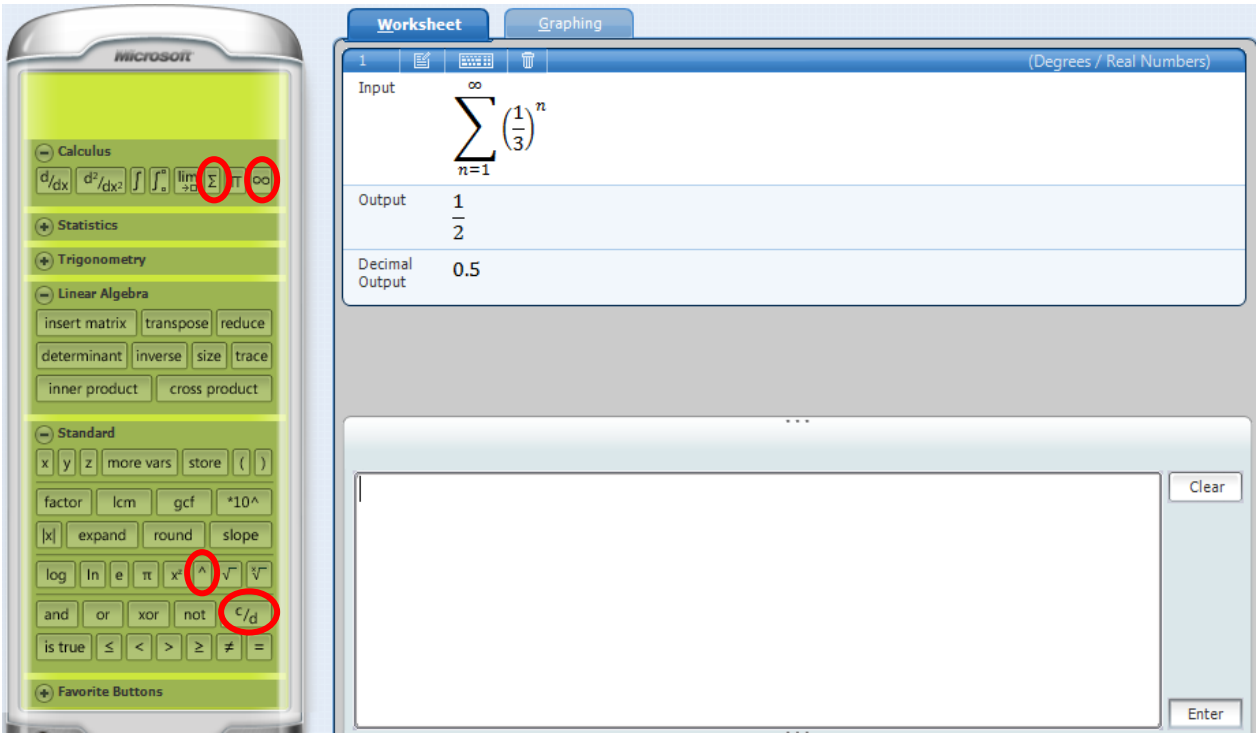
e) $\int_{-\infty}^{0} e^{3x}\,dx$



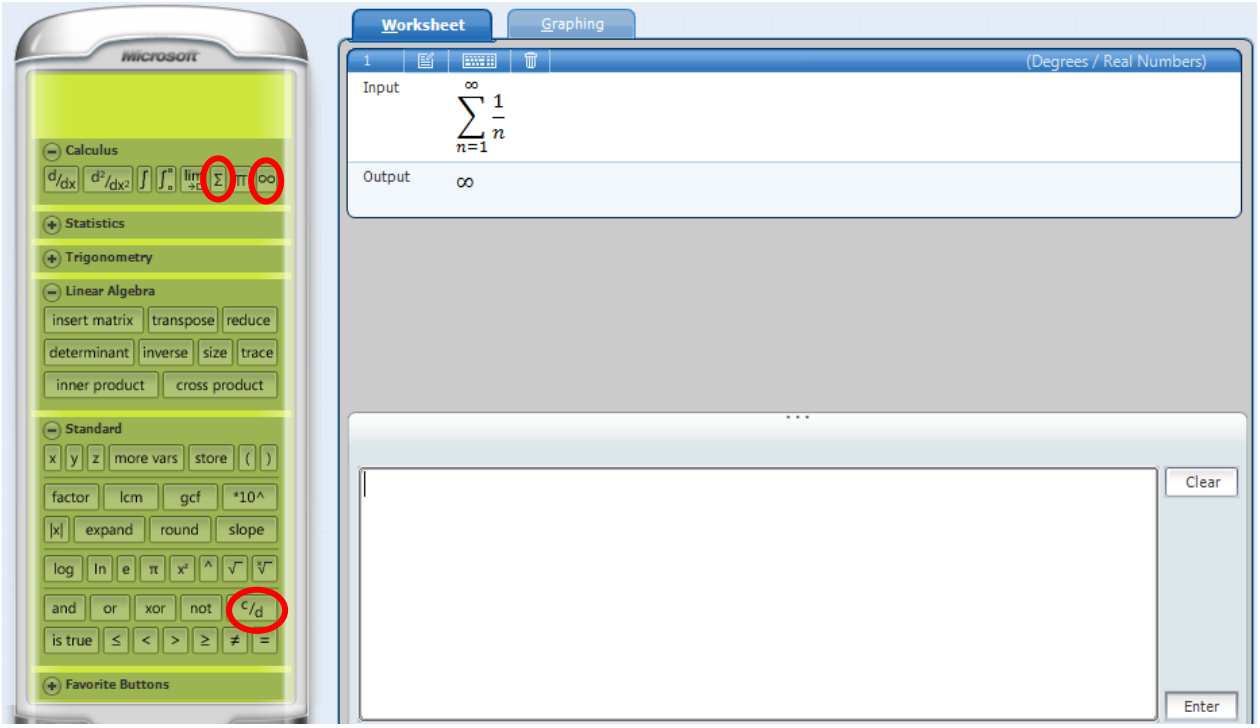
f) $\int_{-1}^{1} \frac{5}{x}\,dx$



g) $\sum_{n=1}^{\infty}\left(\frac{1}{3}\right)^n$

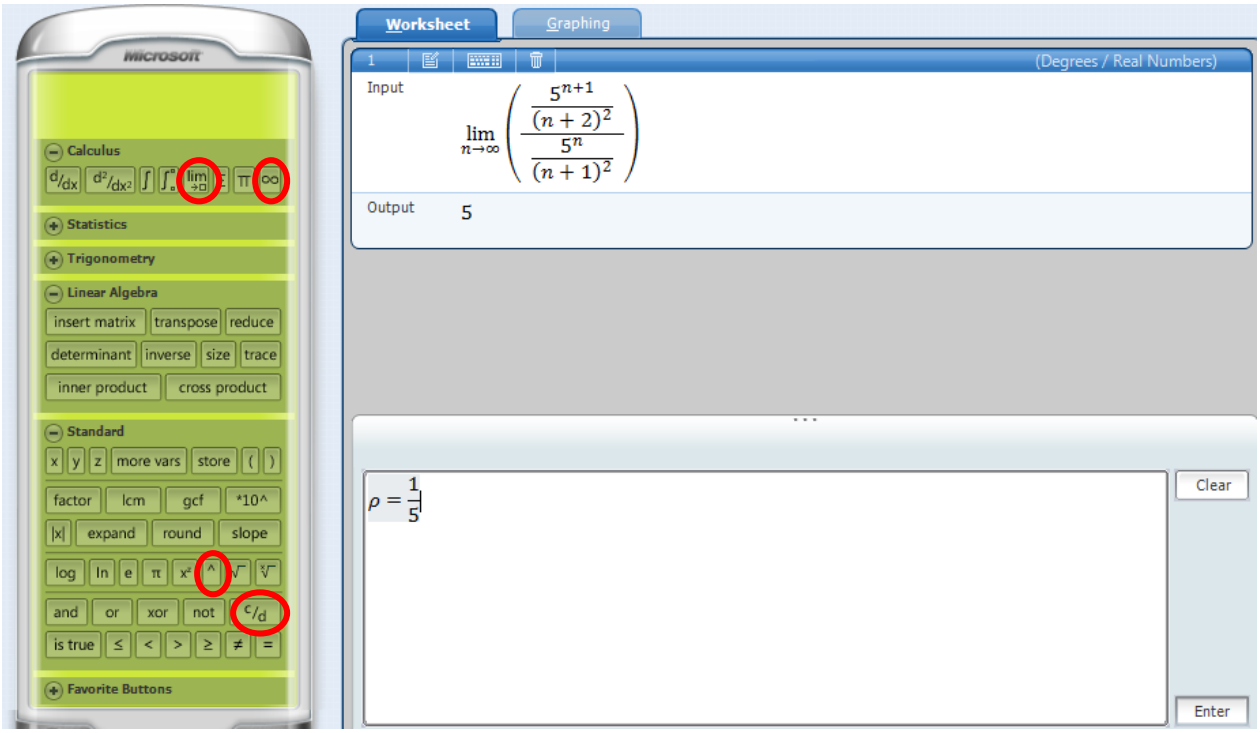


h) $\sum_{n=1}^{\infty}\frac{1}{n}$

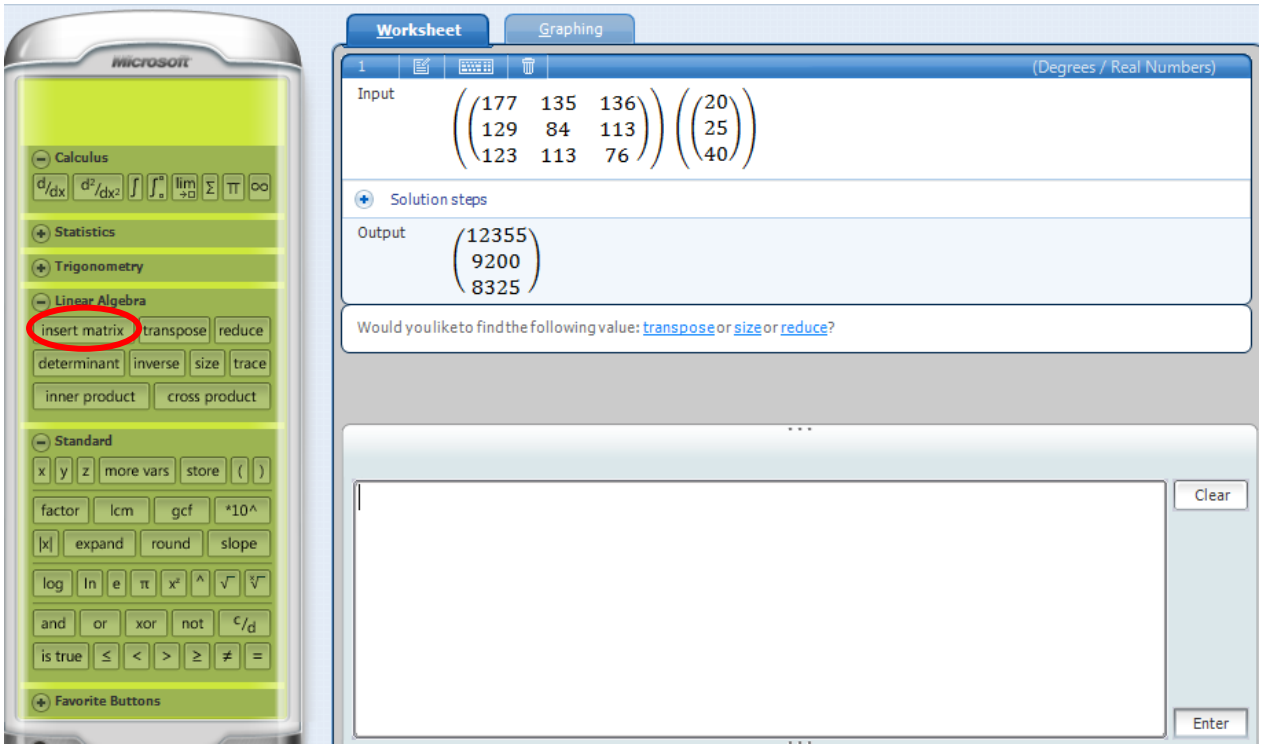


Poznámka 1. Pri výpočte niektorých typov radov je potrebné upraviť hornú hranicu a hodnotu ∞ modifikovať napr. na hodnotu 1000; 800; ...

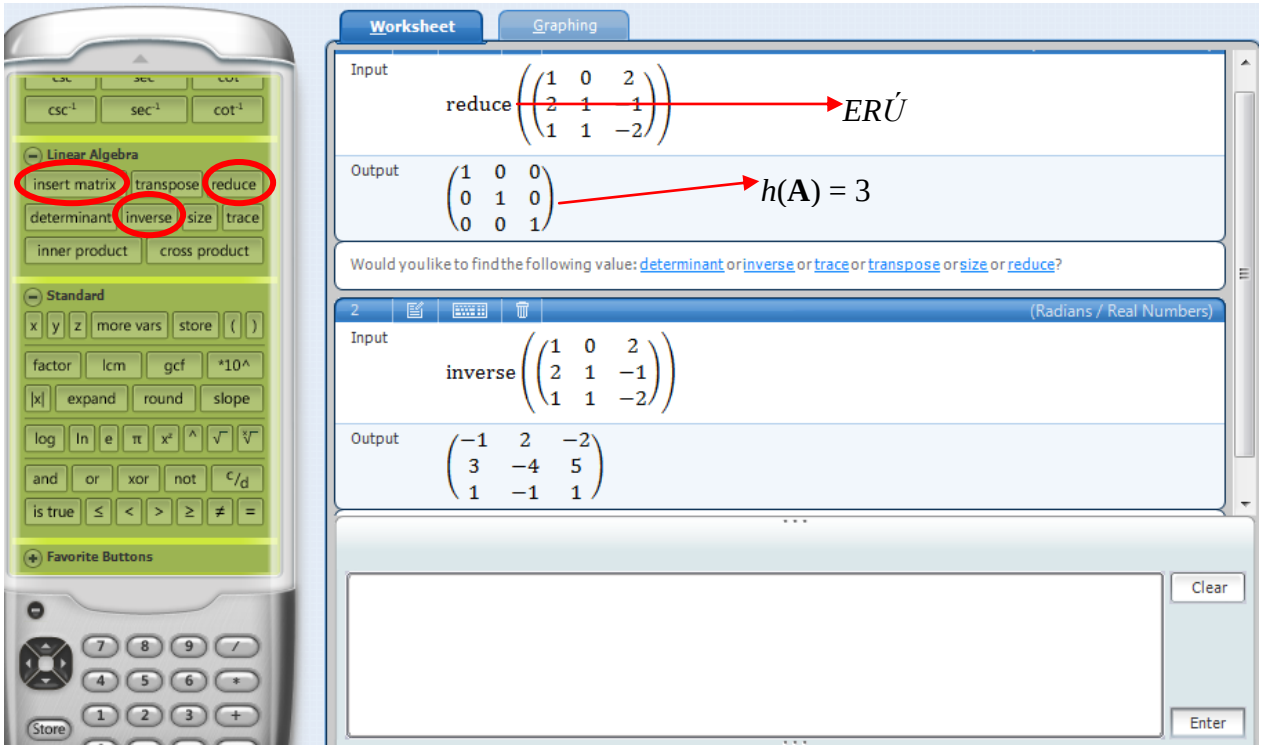
i) $\rho = ?,\ \sum_{n=0}^{\infty} \frac{5^n x^n}{(n+1)^2}$



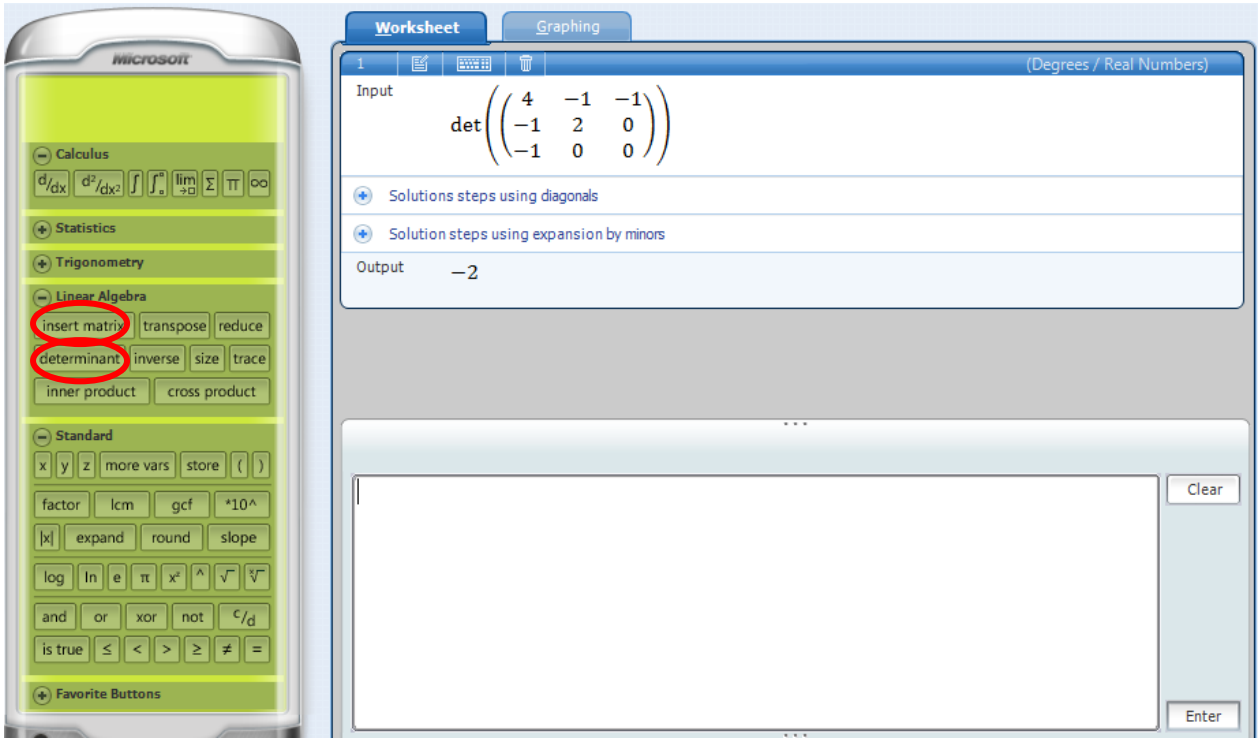
j) $\mathbf{A}\cdot\mathbf{B} = ?,\ \mathbf{A} = \begin{pmatrix} 177 & 135 & 136 \\ 129 & 84 & 113 \\ 123 & 113 & 76 \end{pmatrix},\ \mathbf{B} = \begin{pmatrix} 20 \\ 25 \\ 40 \end{pmatrix}$



k) $h(\mathbf{A}) = ?,\ \mathbf{A}^{-1} = ?,\ \mathbf{A} = \begin{pmatrix} 1 & 0 & 2 \\ 2 & 1 & -1 \\ 1 & 1 & -2 \end{pmatrix}$



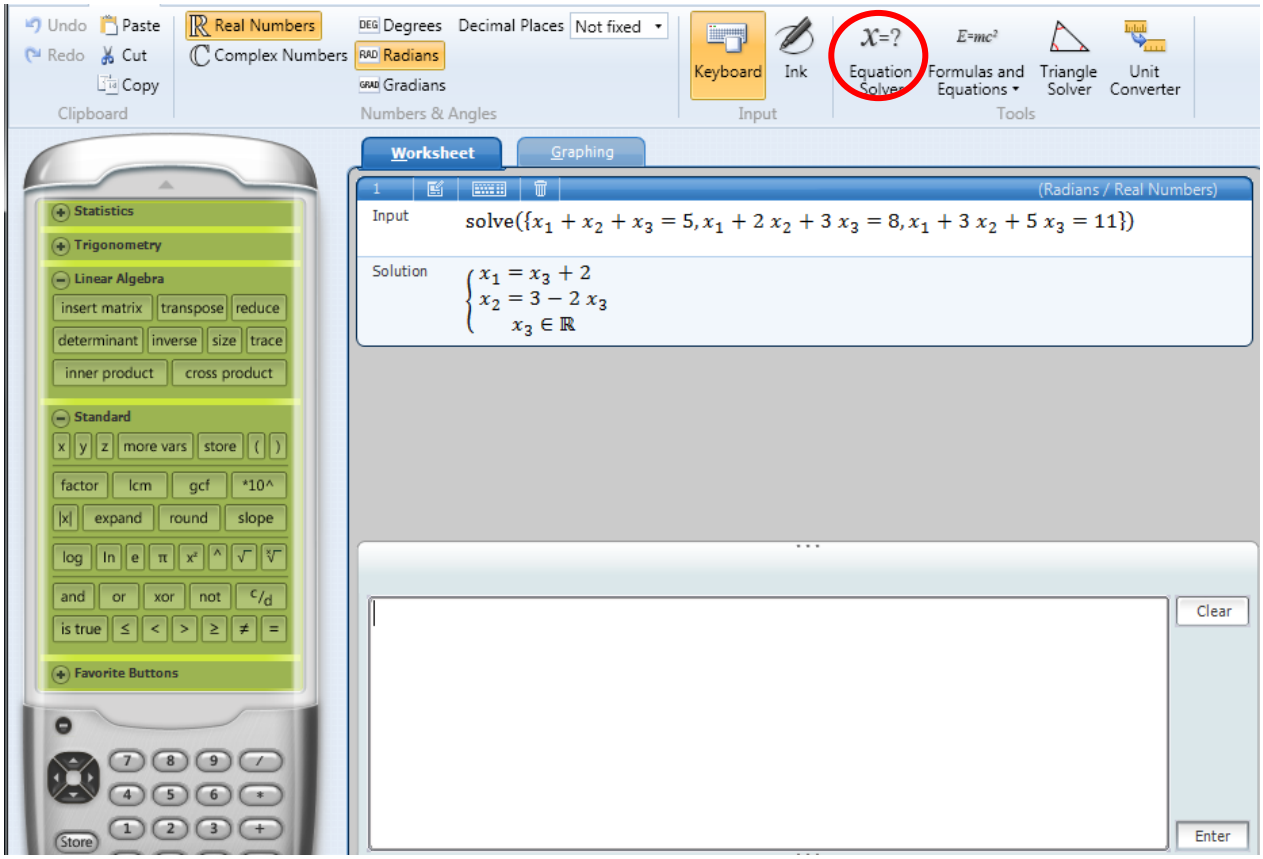
l) $|\mathbf{A}| = ?,\ \mathbf{A} = \begin{pmatrix} 4 & -1 & -1 \\ -1 & 2 & 0 \\ -1 & 0 & 0 \end{pmatrix}$



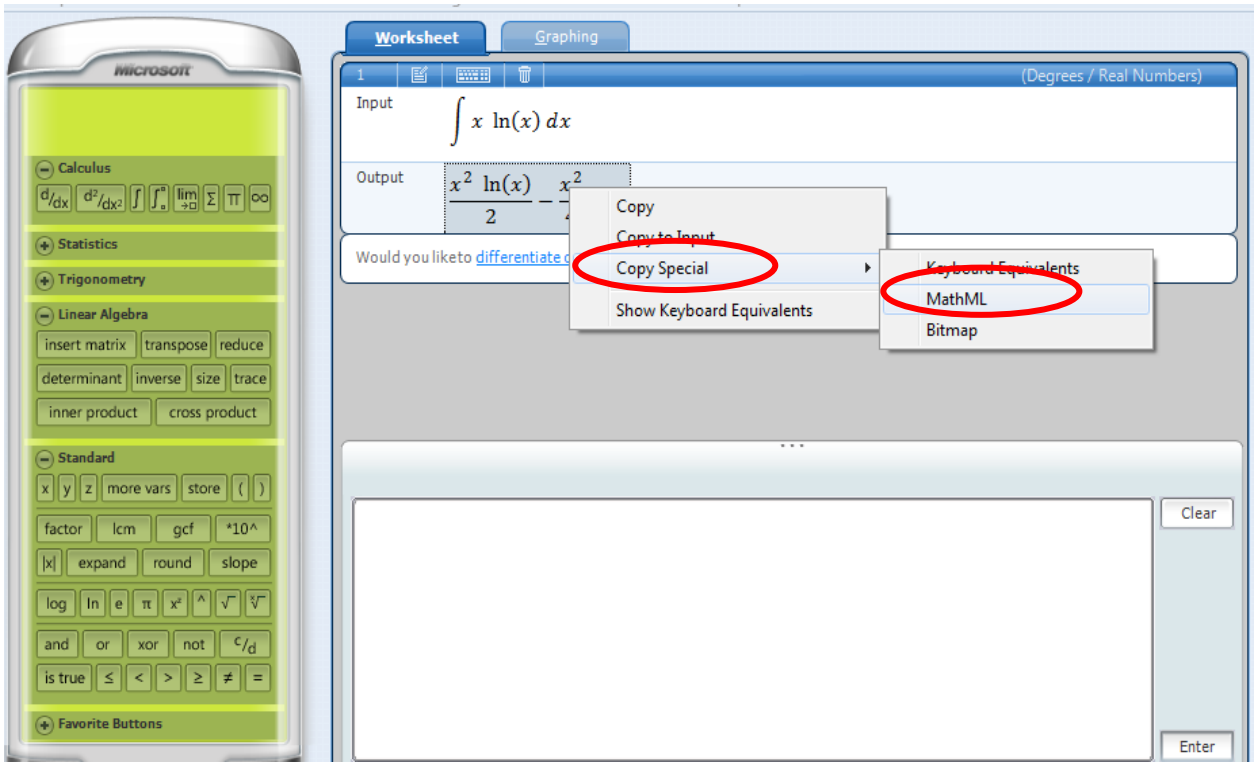
$$1x_1 + 1x_2 + 1x_3 = 5$$

m) $x_1, x_2, x_3 = ?, \; 1x_1 + 2x_2 + 3x_3 = 8$

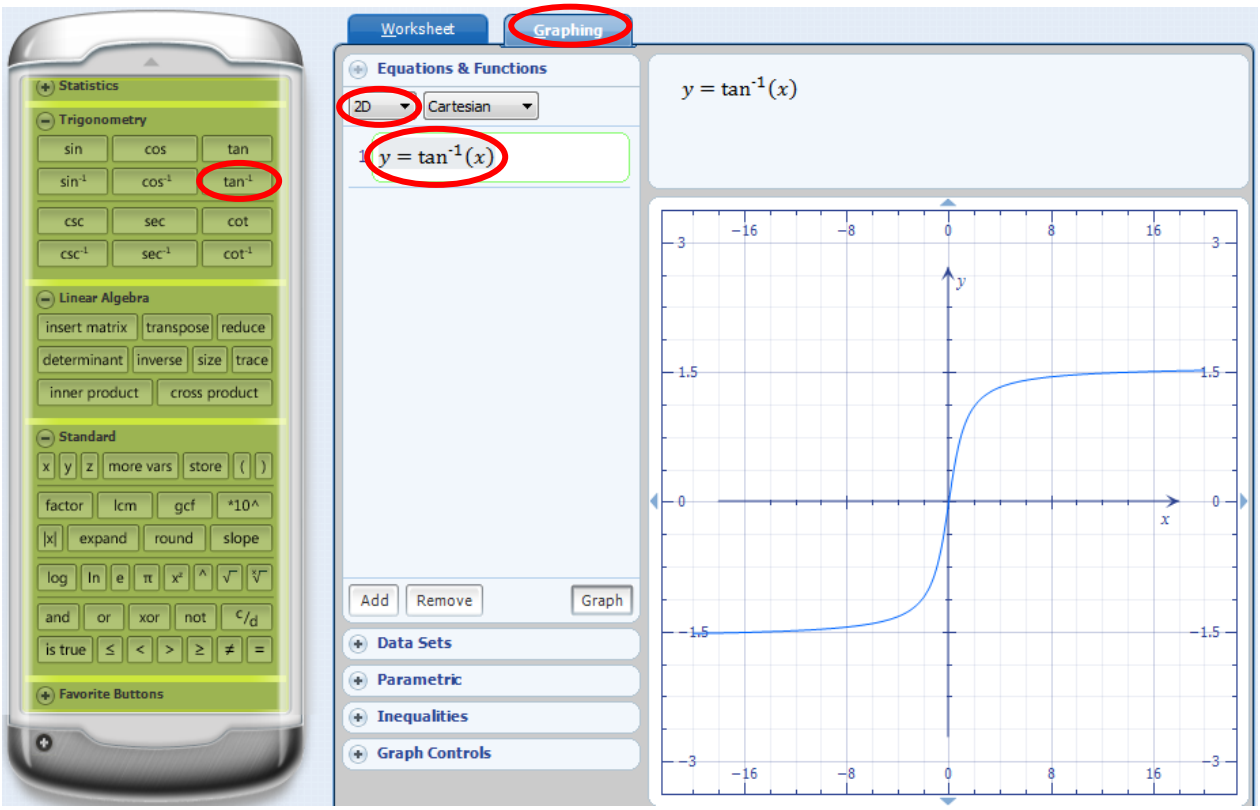
$$1x_1 + 3x_2 + 5x_3 = 11$$



Poznámka 2. MS Mathematics rozpozná indexáciu x_1 pri zadaní premennej ako $x1$.
Poznámka 3. Kopírovanie vzorcov do prostredia MS Word (docx).



Poznámka 4. Príklad práce s 2D grafmi, $y = \operatorname{arctg} x$



Poznámka 5. Príklad práce s 3D grafmi, $z = x^2 + y^2$