Ulohy na 7.10.2014

1) Rozpiste do tvaru jednoducheho polynomu

$$(5x+2)^3$$
$$(1-2x)^4$$

Napiste prve 3 cleny (obsahujuce x^n, x^{n-1}, x^{n-2}) rozvoja

$$(2x+1)^{10}$$
$$(x-2)^8$$

2) Urcte definicny obor funkcie

$$\ln(x^2-4)$$

$$\frac{x^3-x^2-3x}{x^3-2x^2-3x}$$

$$\sin\left(\ln\frac{1}{3x+1}\right)$$

$$\sqrt{\ln\frac{5x-x^2}{4}}$$

$$\frac{1}{e^{\frac{17x^\pi}{e^{x^2/x}}}}$$

3) Najdite x, pre ktore plati

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

$$|x^2-2x-5|-x^2+4x+4=0$$

$$\frac{x+3}{x-1}+\frac{5}{(x^2-1)}=3$$

4) Matematickou indukciou dokazte
a) ze cislo $3^{4n}-2^{3n}$ je delitelne cislom 73 $\forall n\in\mathbb{N}$
b) $\forall n\in\mathbb{N}, n\geq 2:$

$$1+\frac{1}{\sqrt{2}}+\frac{1}{\sqrt{3}}+..+\frac{1}{\sqrt{n}}>\sqrt{n}$$

Plati to aj pre $\forall n\in\mathbb{N}, n\geq 1$?