Aufgabe 1

Mittwoch, 23. Februar 2011
06:13

a) $(\overline{A} \Rightarrow B) \wedge \overline{A} \Leftrightarrow (\overline{\overline{A}} \vee B) \wedge \overline{A}$

$\Leftrightarrow (A \wedge \overline{A}) \vee (B \wedge \overline{A})$

$\Leftrightarrow 0 \vee (B \wedge \overline{A})$

$$\circledast \begin{cases} \Leftrightarrow B \wedge \overline{A} \\ \Leftrightarrow \overline{\overline{B} \vee A} \Leftrightarrow \overline{B \Rightarrow A} \end{cases}$$

b) $(3 \cdot 7 + 78^{925} - 4) \bmod 7 = (3 \cdot 0 + 1^{925} - 4) \bmod 7$

$= (1 - 4) \bmod 7 = -3 \bmod 7 = \underline{\underline{+4}}$

$(2^{501} + 37) \bmod 4 = (2 \cdot 2^{2 \cdot 250} + 1) \bmod 4$

$= (2 \cdot 4^{250} + 1) \bmod 4 = (2 \cdot 0 + 1) \bmod 4 = \underline{\underline{1}}$

c) $\lim\limits_{n \to \infty} \left[\frac{3n^2 + 4n}{n+1} - \frac{3n^2 + n}{n-1} \right] =$

$\lim\limits_{n \to \infty} \left[\frac{(3n^2 + 4n)(n-1) - (3n^2 + n)(n+1)}{n^2 - 1} \right] =$

$\lim\limits_{n \to \infty} \frac{\cancel{3n^3} + 4n^2 - 3n^2 - 4n - (\cancel{3n^3} + n^2 + 3n^2 + n)}{n^2 - 1} =$

$\lim\limits_{n \to \infty} \frac{-3n^2 - 5n}{n^2 - 1} = \lim\limits_{n \to \infty} \frac{-3 - 5 \cdot \frac{1}{n}}{1 - \frac{1}{n^2}} = \underline{\underline{-3}}$

$\circledast$ alle 3 Endlösungen gleich gut