

Aufgabe 1

Mittwoch, 23. Februar 2011

06:13

$$\begin{aligned} a) (\bar{A} \Rightarrow B) \wedge \bar{A} &\Leftrightarrow (\bar{\bar{A}} \vee B) \wedge \bar{A} \\ &\Leftrightarrow (A \wedge \bar{A}) \vee (B \wedge \bar{A}) \\ &\Leftrightarrow 0 \vee (B \wedge \bar{A}) \\ &\Leftrightarrow B \wedge \bar{A} \\ \otimes \left\{ \begin{aligned} &\Leftrightarrow \overline{B \vee A} \\ &\Leftrightarrow \overline{B \Rightarrow A} \end{aligned} \right. \end{aligned}$$

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

$$\begin{aligned} (2^{501} + 37) \bmod 4 &= (2 \cdot 2^{2 \cdot 250} + 1) \bmod 4 \\ &= (2 \cdot 4^{250} + 1) \bmod 4 = (2 \cdot 0 + 1) \bmod 4 = \underline{1} \end{aligned}$$

$$\begin{aligned} c) \lim_{n \rightarrow \infty} \left[\frac{3n^2 + 4n}{n+1} - \frac{3n^2 + n}{n-1} \right] &= \\ \lim_{n \rightarrow \infty} \left[\frac{(3n^2 + 4n)(n-1) - (3n^2 + n)(n+1)}{n^2 - 1} \right] &= \\ \lim_{n \rightarrow \infty} \frac{\cancel{3n^3} + 4n^2 - 3n^2 - 4n - (\cancel{3n^3} + n^2 + 3n^2 + n)}{n^2 - 1} &= \\ \lim_{n \rightarrow \infty} \frac{-3n^2 - 5n}{n^2 - 1} &= \lim_{n \rightarrow \infty} \frac{-3 - 5 \cdot \frac{1}{n}}{1 - \frac{1}{n^2}} = \underline{\underline{-3}} \end{aligned}$$

⊗ alle 3 Endlösungen
gleich gut