TL32_VJQD

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1. Entornos Matemáticos

1.1. Expresiones

1.

$$\begin{aligned}
h_{wH}(\delta) &= \min_{z\in(0,1]} \log_q \frac{f_{wH}(z)}{z^\delta} \\
&= \min_{z\in(0,1]} (\log_q f_{wH}(z) - \log_q z^\delta) \\
&= \min_{z\in(0,1]} (\log_q(1+(q-1)z) - \delta \log_q z) \\
&= \log_q \left(1 + (q-1)\frac{\delta}{(q-1)(1-\delta)}\right) - \delta \log_q \left(\frac{\delta}{(q-1)(1-\delta)}\right) \\
&= \log_q \left(\frac{1}{(1-\delta)}\right) - \delta \log_q \delta + \delta \log_q(q-1) + \delta \log_q(q-1) \\
&= \log_q \frac{1}{\delta} + (1-\delta)\log_q \frac{1}{1-\delta} + \delta \log_q(q-1)
\end{aligned}$$

2.

$$\begin{aligned}
ab &= [x_1,x_2]qx_2[x_1,x_2][x_1,x_2]x_1 + q^{-1}qx_2[x_1,x_2][[x_1,x_2] + q^{-1}x_2x_1][x_1,x_2]x_1 \\
&= [x_1,x_2]qx_2[x_1,x_2][x_1,x_2]x_1 + x_2[x_1,x_2][x_1,x_2][x_1,x_2]x_1 \\
&\quad + x_2[x_1,x_2]q^{-1}x_2x_1[x_1,x_2]x_1
\end{aligned}$$

3.

$$[x_i, x_j] = 0, \quad si\ |i-j| > 1; \tag{1}$$
$$[[x_i, x_{i+1}], x_{i+1}] = 0, \quad si\ 1 \leq i < n; \tag{2}$$
$$[x_i, [x_i, x_{i+1}]] = 0, \quad si\ 1 \leq i < n. \tag{3}$$

4.

$$[x_i, x_j] = 0, \quad si\ |i-j| > 1;$$
$$[[x_i, x_{i+1}], x_{i+1}] = 0, \quad si\ 1 \leq i < n;$$

$$[x_i, [x_i, x_{i+1}]] = 0, \quad si\ 1 \leq i < n. \tag{4}$$

5.

$$\begin{aligned} e^{i\theta_1} e^{i\theta_2} &= (\cos\theta_1 + i\sin\theta_1)(\cos\theta_2 + i\sin\theta_2) \\ &= (\cos\theta_1\cos\theta_2 - \sin\theta_1\sin\theta_2) + i(\cos\theta_1\sin\theta_2 + \sin\theta_1\cos\theta_2) \\ &= \cos(\theta_1+\theta_2) + \sin(\theta_1+\theta_2) \\ &= e^{i(\theta_1+\theta_2)} \end{aligned}$$