titlesec[2016/03/21]

example

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December 25, 2024

Contents

Proof 0.0.1 *Let $t, u \in \mathbb{R}$ where $t = xy$ and $u = zw$. So,*

$$
\begin{aligned}
4xyzw &= 2 \cdot 2tu \\
&\leq 2 \cdot (t^2 + u^2) \\
&= 2 \cdot ((xy)^2 + (zw)^2) && \textit{(substituting variables)} \\
&= 2 \cdot (x^2 y^2 + z^2 w^2) \\
&= 2x^2 y^2 + 2z^2 w^2 \\
&\leq ((x^2)^2 + (y^2)^2) + ((z^2)^2) + (w^2)^2) \\
&= x^4 + y^4 + z^4 + w^4
\end{aligned}
$$