Let us begin with
\[ e^{2\pi i} = 1. \]

Multiply both sides by \( e \):
\[ e^{1+2\pi i} = e. \]

Raise both sides to the power \( 1 + 2\pi i \):
\[ (e^{1+2\pi i})^{1+2\pi i} = e^{1+2\pi i}. \]

According to (1), the right hand side equals \( e \), so we write:
\[ e = (e^{1+2\pi i})^{1+2\pi i} \]
\[ = e^{(1+2\pi i)^2} \]
\[ = e^{1+4\pi i-4\pi^2} \]
\[ = e^{1-4\pi^2}. \]

Dividing both sides on \( e \) we obtain
\[ 1 = e^{-4\pi^2}. \]

Where is the mistake?