Problem

Solve:

$$(i \cdot \pi)8 \int_{0}^{1} e^{i\pi x} dx + 16\sin^2 x + 16\cos^2 x$$

Solution

The Euler's Identity is:

$$e^{i\pi} + \sin^2 x + \cos^2 x = 0$$

i=$\sqrt{-1}$, base of complex numbers

e=Euler's number, $e^0 = 1$

π=relation between circle diameter and perimeter

$(i \cdot \pi)8 \int_0^1 e^{i\pi x} dx + 16\sin^2 x + 16\cos^2 x = (i \cdot \pi)8 \frac{1}{i \cdot \pi} e^{i\pi x}\Big|_0^1 + 8 + 8\sin^2 x + 8\cos^2 x =$
$8\left(e^{i\pi} - 1\right) + 8 + 8\sin^2 x + 8\cos^2 x = 8e^{i\pi} + 8\sin^2 x + 8\cos^2 x = 8(e^{i\pi} + \sin^2 x + \cos^2 x) = \mathbf{0}$

Answer = 0