



Solución

$$\int_0^2 \sqrt{1 + \cos^2(x)} \, dx = \sqrt{2} \operatorname{E}\left(2 \mid \frac{1}{2}\right) - \sqrt{2} \operatorname{E}\left(0 \mid \frac{1}{2}\right)$$

Pasos

$$\int_0^2 \sqrt{1 + \cos^2(x)} \, dx$$

Esta es una integral no elemental: $\int \sqrt{1 + \cos^2(x)} \, dx = \sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right)$

$$= \left[\sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right) \right]_0^2$$

Calcular los límites: $\left[\sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right) \right]_0^2 = \sqrt{2} \operatorname{E}\left(2 \mid \frac{1}{2}\right) - \sqrt{2} \operatorname{E}\left(0 \mid \frac{1}{2}\right)$

Ocultar pasos

$$\int_a^b f(x) \, dx = F(b) - F(a) = \lim_{x \rightarrow b^-} (F(x)) - \lim_{x \rightarrow a^+} (F(x))$$

$$\lim_{x \rightarrow 0^+} \left(\sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right) \right) = \sqrt{2} \operatorname{E}\left(0 \mid \frac{1}{2}\right)$$

Ocultar pasos

$$\lim_{x \rightarrow 0^+} \left(\sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right) \right)$$

Sustituir la variable

$$= \sqrt{2} \operatorname{E}\left(0 \mid \frac{1}{2}\right)$$

$$\lim_{x \rightarrow 2^-} \left(\sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right) \right) = \sqrt{2} \operatorname{E}\left(2 \mid \frac{1}{2}\right)$$

Ocultar pasos

$$\lim_{x \rightarrow 2^-} \left(\sqrt{2} \operatorname{E}\left(x \mid \frac{1}{2}\right) \right)$$

Sustituir la variable

$$= \sqrt{2} \operatorname{E}\left(2 \mid \frac{1}{2}\right)$$

$$= \sqrt{2} \operatorname{E}\left(2 \mid \frac{1}{2}\right) - \sqrt{2} \operatorname{E}\left(0 \mid \frac{1}{2}\right)$$

$$= \sqrt{2} \operatorname{E}\left(2 \mid \frac{1}{2}\right) - \sqrt{2} \operatorname{E}\left(0 \mid \frac{1}{2}\right)$$

