Closure relation for the infinite square well, spanning the range $0 < x < 1$

$$\text{psia}(x, n) := \sqrt{2} \cdot \sin(n \cdot \pi \cdot x)$$

$x := 0, 0.005..1$  \hspace{1cm} \text{TOL} := 0.000001$

$$\text{Delt}(x, xd, m) := \sum_{n=1}^{m} (\text{psia}(x, n) \cdot \text{psia}(xd, n))$$

$\text{maxm} := 5$ \hspace{1cm} \text{maxm determines the number of terms included in the infinite sum}$

\[\int_{0}^{1} \text{Delt}(x, 0.25, \text{maxm}) \, dx = 1.0204\] \hspace{1cm} \[\int_{0}^{1} \text{Delt}(x, 0.5, \text{maxm}) \, dx = 1.1035\] \hspace{1cm} \[\int_{0}^{1} \text{Delt}(x, 0.75, \text{maxm}) \, dx = 1.0204\]
Closure relation for the infinite square well, spanning the range $0 < x < 1$

\[ \psi_{ia}(x, n) := \sqrt{2} \cdot \sin(n \cdot \pi \cdot x) \]
\[ x := 0, 0.005 \ldots 1 \quad \text{TOL} := 0.000001 \]
\[ \text{Delt}_n(x, xd, m) := \sum_{n=1}^{m} (\psi_{ia}(x, n) \cdot \psi_{ia}(xd, n)) \]

\[ \text{maxm} := 50 \quad \text{maxm determines the number of terms included in the infinite sum} \]

\[ \int_{0}^{1} \text{Delt}(x, 0.25, \text{maxm}) \, dx = 0.9996 \quad \int_{0}^{1} \text{Delt}(x, 0.5, \text{maxm}) \, dx = 1.0127 \quad \int_{0}^{1} \text{Delt}(x, 0.75, \text{maxm}) \, dx = 0.9996 \]
Closure relation for the infinite square well, spanning the range $0 < x < 1$

$$\psi_a(x, n) := \sqrt{2} \sin(n \pi x)$$

$$x := 0, 0.005..1 \quad \text{TOL} := 0.000001$$

$$\Delta(x, xd, m) := \sum_{n=1}^{m} (\psi_a(x, n) \cdot \psi_a(xd, n))$$

$maxm := 500 \quad \text{maxm determines the number of terms included in the infinite sum}$

\[\int_0^1 \Delta(x, 0.25, maxm) \, dx = 1.0018 \quad \int_0^1 \Delta(x, 0.5, maxm) \, dx = 0.9987 \quad \int_0^1 \Delta(x, 0.75, maxm) \, dx = 1.0018\]