$diff(\,\mathrm{psi}(x), x\$2\,) + k^2 \cdot \mathrm{psi}(x) = 0;$

$$\frac{d^2}{dx^2}\,\psi(x) + k^2\,\psi(x) = 0 \qquad \textbf{(1)}$$

$\xrightarrow{\text{solve DE}}$

$$\psi(x) = \_C1\,\sin(k\,x) + \_C2\,\cos(k\,x) \qquad \textbf{(2)}$$

$\xrightarrow{\text{evaluate at point}}$

$$\psi(x) = A\,\sin(k\,x) \qquad \textbf{(3)}$$

$\int_0^a A^2 \cdot \sin^2(k \cdot x)\,dx$

$$-\frac{1}{2}\,\frac{A^2\,(\cos(k\,a)\,\sin(k\,a) - k\,a)}{k} \qquad \textbf{(4)}$$

De term cos(ka)sin(ka) wordt vervangen door sin(2ka). Deze sin term wordt snel kleiner bij groter k.

$\frac{A^2 a}{2} = 1;$

$$\frac{1}{2}\,A^2\,a = 1 \qquad \textbf{(5)}$$