In[21]:= Clear[L];
ψ[x_] := A * Sin[k * x];

Clear[En];
condition =
$$\frac{ψ[x] * En * 2\,m}{ℏ^2} == ψ''[x]$$
Solve[condition, En]

Out[24]= $\frac{2\,A\,En\,m\,Sin[k\,x]}{ℏ^2} == -A\,k^2\,Sin[k\,x]$

Out[25]= $\left\{\left\{En \rightarrow -\frac{k^2\,ℏ^2}{2\,m}\right\}\right\}$

(* Muga Baldintza 2 : X=L ; ψ=0; *)

condition =
ψ[L] == 0
Solve[condition, k]

Out[•]= A Sin[k L] == 0

Out[•]= $\left\{\left\{k \rightarrow ConditionalExpression\left[\frac{2\,π\,c_1}{L},\ c_1 \in \mathbb{Z}\right]\right\},\right.$
$\left.\left\{k \rightarrow ConditionalExpression\left[\frac{π + 2\,π\,c_1}{L},\ c_1 \in \mathbb{Z}\right]\right\}\right\}$

In[•]:=
$$k = \frac{2\,π\,n}{L};$$
(* n= 1,2,3 ...*)

In[ ]:= **(*Normalizatu*)**
condition =
 Integrate[ψ[x]^2, {x, 0, L}] == 1
Solve[condition, A]

Out[ ]= $\dfrac{A^2\, L}{2} == 1$

Out[ ]= $\left\{\left\{A \to -\dfrac{\sqrt{2}}{\sqrt{L}}\right\}, \left\{A \to \dfrac{\sqrt{2}}{\sqrt{L}}\right\}\right\}$