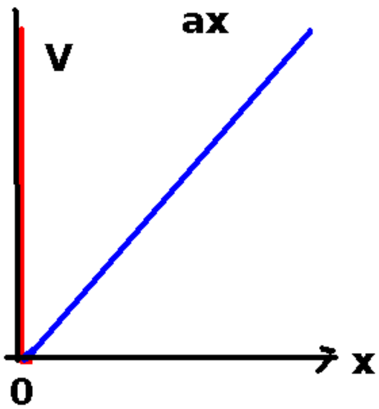
We consider an infinite square well with a sloped potential:
a semi-qualitative abbreviated approach to the problem.



The 1DTISWE:

$$-\frac{\hbar^2}{2m}\frac{d^2\varphi}{dx^2}+ax\varphi=E\varphi$$

Change variables:

$$u\equiv\left(\frac{2m}{\hbar^2}a\right)^{1/3}\left(x-\frac{E}{a}\right)$$

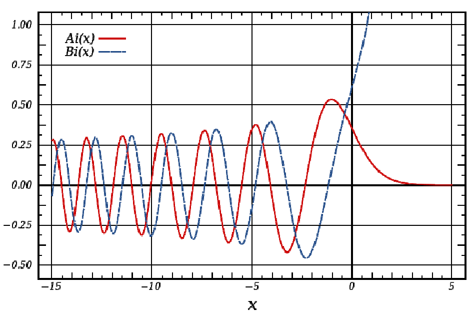
Then the SWE becomes:

$$\frac{d^2\varphi}{dx^2}-u\varphi=0$$

The solutions to this equation are Airy functions Ai(x) and Bi(x).
We require here that at x=0, the wavefunction vanishes.
At infinity the wave function also must vanish. This allows us to discard Bi(x).
Note that

$$u(0)=-\left(\frac{2m}{\hbar^2}a\right)^{1/3}\frac{E}{a}$$

So we'd only retain the Ai.



This is from Wikipedia and shows the two functions.
We'll only use the red solutions here.

The zeros of the Airy functions give the energies.
Ai(u')=0
Look at dlmf.nist.gov
The first zero is when u'=-2.3381 which gives the ground energy:

$$\left(\frac{2m}{\hbar^2}a\right)^{1/3}\frac{E_1}{a}=2.3381\Rightarrow\frac{E_1}{a}=2.3381\left(\frac{\hbar^2}{2ma}\right)^{1/3}\Rightarrow E_1=2.3381\left(\frac{a^2\hbar^2}{2m}\right)^{1/3}$$

The second energy would be:
u'=-4.0879 which gives:

$$\left(\frac{2m}{\hbar^2}a\right)^{1/3}\frac{E_2}{a}=4.0879\Rightarrow\frac{E_2}{a}=4.0879\left(\frac{\hbar^2}{2ma}\right)^{1/3}\Rightarrow E_2=4.0879\left(\frac{a^2\hbar^2}{2m}\right)^{1/3}$$

etc.

Some points to note is that as x increases, fewer and fewer squiggles are present.
Mostly the particle is going to try to bunch up in the lower potential regions.
In a slightly different problem, without the wall at zero, you would need to worry about symmetries and solution numbering may be different.