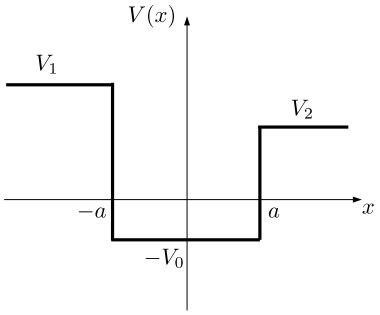

Bonus (optional) Problem 1

(*3 bonus points*)

Due: 30 June 2020, 12.30 p.m.

An electron moves in the potential well

$$V(x) = \begin{cases} V_1 & \text{for} \quad x \le -a \\ -V_0 & \text{for} \quad |x| < a \\ V_2 & \text{for} \quad x \ge a. \end{cases}$$



Use a computer algebra system to find the ground state energy of that electron for the following sets of parameters

(a) $a = 0.1$ nm, $V_0 = 10$ eV, $V_1 = 2$ eV, $V_2 = 0$ eV;

(b) $a = 1$ nm, $V_0 = 10$ eV, $V_1 = 2$ eV, $V_2 = 0$ eV.

You do not need to write a formal answer — just generate a pdf file with your code (e.g. a Mathematica notebook) and attach the original code file.