In[4]:=
```
allInOne[eng_, v0_, vb_] := ((*defined the constents and V*)
  cof := {{1, b1}, {a2, b2}, {a3, b3}, {a4, b4}, {a5, 0}};
  v := {0, vb, -(v0 / 2), -(v0 / 2) + vb, -v0};
  (*defined a density function*)densityFunction[f_] := f f*;
  (*defined the potential function*)pot[x_] := Piecewise[
    {{v1, x < 0}, {v2, 0 < x < 10}, {v3, 10 < x < 60}, {v4, 60 < x < 70}, {v5, 70 < x}}];
  (*defined the form of the wave function in different zone*)
  expform[zone_, x_] := Part[Part[cof, zone], 1] Exp[I k[zone] x] +
    Part[Part[cof, zone], 2] Exp[-I k[zone] x];
  k[zone_] := Sqrt[(eng - Part[v, zone]) / 3.81];
  (*solve the equations and save the result to result*)
  result := Solve[{expform[1, 0] == expform[2, 0], expform[2, 10] == expform[3, 10],
     expform[3, 60] == expform[4, 60], expform[4, 70] == expform[5, 70],
     (D[expform[1, x], x] /. x → 0) == (D[expform[2, x], x] /. x → 0),
     (D[expform[2, x], x] /. x → 10) == (D[expform[3, x], x] /. x → 10),
     (D[expform[3, x], x] /. x → 60) == (D[expform[4, x], x] /. x → 60),
     (D[expform[4, x], x] /. x → 70) == (D[expform[5, x], x] /. x → 70)},
    {a2, a3, a4, a5, b1, b2, b3, b4}];
  (*defined the final wave function*)phi[x_] := Evaluate[Piecewise[
      {{expform[1, x], x < 0}, {expform[2, x], 0 < x < 10}, {expform[3, x], 10 < x < 60},
       {expform[4, x], 60 < x < 70}, {expform[5, x], 70 < x}}] /. result[[1]]];
  (*if want to output the R and T,uncommon this line*)
  refl := Evaluate[Sqrt[densityFunction[b1]] /. result[[1]]];
  trans := Evaluate[Sqrt[densityFunction[a5]] /. result[[1]]];
  Return[{refl, trans}]
  (*if want to output the plot of wave function,uncommon this line*)
  (*Plot[{pot[x],Re[phi[x]],Im[phi[x]],Sqrt[densityFunction[phi[x]]]},
   {x,-50,100},PlotRange→{-2,2}]*))

(*if want to output the plot of R and T... it takes a few sec*)
ListLinePlot[{Table[{v0, Part[allInOne[0.1, v0, 0.2], 1]}, {v0, 0.0111, 2, 0.001}],
  Table[{v0, Part[allInOne[0.1, v0, 0.2], 2]}, {v0, 0.0111, 2, 0.001}],
  Table[{v0, 1 - Part[allInOne[0.1, v0, 0.2], 1]},
   {v0, 0.0111, 2, 0.001}]}, PlotRange → {0, 1}]

(*if want to output a animation of the wave function*)
(*Manipulate[allInOne[eng,0.3,0.2],{eng,0.07,0.5,0.02}]*)
```

Out[5]=