The following code segment illustrates the method of solution for the vapor atom cluster size data shown in Table 7.5. The code numerically integrates equation (2.18).

\[
CCu = 3.33 \times 10^{18}; \quad \text{Concentration of Copper (atoms/m}^3) > \\
kBz = 1.3807 \times 10^{-23}; \quad \text{Boltzmann’s constant} > \\
TK = 270; \quad \text{Temperature} > \\
Mass = 1.06 \times 10^{-25}; \quad \text{Copper atom mass} > \\
\tau = 0.0001; \quad \text{Time step (sec)} >
\]

\[
sol = \text{NDSolve}\{y'[x] == CCu*Pi*(2.9 \times 10^{-10}y[x] + 3.9 \times 10^{-10})^2\text{Sqrt}[1 + y[x]]*8*kBz*TK/(Pi*y[x]*Mass)], y[0] == 2.}, \{y, x, 0, \tau\}]
\]

\[
\text{Plot[Evaluate[y[x]/.sol], \{x, 0, \tau\};}
\]

\[
\{\{y -> \text{InterpolatingFunction}[[\{0., 0.0001\}], <>]]
\]

Figure B.1  **Cluster size as a function of time.** Evaluation of equation (2.18) for a copper concentration of $3.33 \times 10^{18}$ atoms/m$^3$ yields this vapor atom cluster size prediction as a function of time.