Write the best answer to each question in the box provided. Show your work.

1. The height \( h \) of a pile of sand increases at a rate that is proportional to the cube of its height. Set up (but do not solve) a differential equation modeling this situation.

\[
\frac{dh}{dt} =
\]

2. Given that \( \frac{db}{dt} = 2tb \), and that \( b = 2 \) when \( t = 1 \), solve the differential equation to get the original function \( b(t) \).

\[
b(t) =
\]

3. Use Euler’s method to approximate the value of \( y(4) \) if \( \frac{dy}{dx} = 3x + y \) and \( y(0) = 2 \). Use a stepsize of \( h = 2 \).

\[
y =
\]