3. [8 points]
   a. [4 points] Write a formula for the function $G(t)$ whose derivative is $\cos(5t)$ and whose graph passes through the point $(0, 3)$.

   \[
   \text{Solution:} \\
   G(t) = \frac{\sin(5t)}{5} + 3 \\
   \text{Alternatively:} \\
   G(t) = \int_0^t \cos(5u) \, du + 3
   \]

   b. [4 points] Write a formula for the function $H(t)$ whose derivative is $\cos(t^5)$ and whose graph passes through the point $(0, 3)$.

   \[
   \text{Solution:} \\
   H(t) = \int_0^t \cos(u^5) \, du + 3
   \]

4. [5 points] A deep sea diver is swimming to the surface of the water from a depth of 50 meters. At a depth of $x$ meters below the surface of the water, the water pressure is changing at a rate of $a(x)$ pascals/meter (pascal is the metric unit for pressure). If the water pressure is 592,000 pascals at a depth of 50 meters, write an expression involving integrals that gives the water pressure in pascals when the diver is $x$ meters from the surface of the water.

   \[
   \text{Solution:} \\
   p(x) = 592,000 + \int_{50}^x a(t) \, dt \\
   \text{Alternative solution:} \\
   p(x) = \int_0^x a(t) \, dt
   \]

   This assumes that the pressure at the surface of the water is 0.