1. (4 points) Determine the average value of the function \( f(x) = 5 \sin \left( \frac{x}{2} \right) \) on the interval \([0, 2\pi]\). Simplify your answer as much as possible.
2. (3 points) Let $R$ be the region bounded by the graphs of $x = (y - 2)^2 + 1$, $x = 0$, $y = 0$, and $y = 4$. Set up, but do not evaluate, a definite integral which represents the volume of the solid obtained when $R$ is revolved around the $x$-axis.

3. (3 points) Let $R$ be the region bounded by the graph of $y = 3xe^{-0.02x^2}$ and the $x$-axis on the interval $[0, 15]$. Set up, but do not evaluate, a definite integral which represents the volume of the solid obtained when $R$ is revolved around the $y$-axis.