1. (2 points) Evaluate the following integral: \[ \int \cos^5(4x) \sin^2(4x) dx. \]

2. (3 points) Evaluate the following integral: \[ \int \sqrt{9 - x^2} dx. \]
3. (3 points) Evaluate the following integral: \[
\int_{0}^{4} \frac{3x^3}{\sqrt{16 - x^2}} \, dx.
\]

4. (2 points) Evaluate the following integral: \[
\int \sec^3(x) \, dx.
\]