1. Integrate. \[ \int \frac{3x^2 + 8x}{\sqrt{x^3 + 4x^2 + 1}} \, dx \]

2. Calculate the value of the definite integral. \[ \int_0^\pi e^{\cos(x)} \sin(x) \, dx \]

3. Find the volume of the solid of revolution generated by revolving \textit{around the x-axis} the area enclosed by the following curves.
\[ y = x + 5, \quad y = \sqrt{\sin(x)}, \quad x = 0, \quad x = \pi \]