Problem 1: (7 points) Evaluate the integral
\[ \int \sqrt{2x - x^2} \, dx \]

Problem 2: (6 points) Write the general form of the partial fraction decomposition of
\[ \frac{2x - 1}{(1 - x^2)(x^3 - 1)} \]. DO NOT FIND THE CONSTANTS.
Problem 3: (12 points) Determine whether the improper integral converges or diverges.

(a) \[ \int_{0}^{\infty} \frac{x \, dx}{e^x} \]

(b) \[ \int_{0}^{2} \frac{dx}{(x - 1)^5} \]