Problem 2: saddle point at (0, 1).
Problem 3: 48π.
Problem 4: Potential: \( V = 2yz - z^3 + 2x^2y + xy^2 + y^2 + x^3 - x^2 + c \), \( c = \text{const.} \) Integral = 27.
Problem 5: \(-16\pi\).
Problem 6: \(3\sqrt{2}\pi\).