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 =const. Integral = 27.
Problem 5: -16π.
Problem 6: $3\sqrt{2}\pi$.