Problem 4

Comment: *The Organizing Committee prepared three theoretical problems. Unfortunately, at the time of the 1st Olympiad the Romanian students from the last class had the entrance examinations at the universities. For that Romania sent a team consisting of students from younger classes. They were not familiar with electricity. To give them a chance the Organizers (under agreement of the International Board) added the fourth problem presented here. The students (not only from Romania) were allowed to chose three problems. The maximum possible scores for the problems were: 1st problem – 10 points, 2nd problem – 10 points, 3rd problem – 10 points and 4th problem – 6 points. The fourth problem was solved by 8 students. Only four of them solved the problem for 6 points.*

A closed vessel with volume V_0 = 10 l contains dry air in the normal conditions (t_0 = 0°C, p_0 = 1 atm). In some moment 3 g of water were added to the vessel and the system was warmed up to t = 100°C. Find the pressure in the vessel. Discuss assumption you made to solve the problem.