IPE 307 – Class Test-1 **May 31, 2021**

- Marks are shown in brackets [].
- You may use calculators (for basic calculations ONLY) unless stated otherwise
- **You are expected to EXPLAIN YOUR WORKING and SHOW ALL CALCULATIONS.**

Name: _____Student ID: _____**Time: 20 Minutes**

1. [20] Consider the problem

$$\min_{x \in R^2} f(x) = -2x_1 + x_2 \text{ subject to } \begin{cases} (1-x_1)^3 - x_2 \geq 0 \\ x_2 + 0.25x_1^2 - 1 \geq 0 \end{cases}$$

The optimal solution is $x* = (0, 1)^T$, where both constraints are active. Is this a regular point? Are the KKT conditions satisfied?