Econ 703 Final Exam

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Answer three out of four questions. Each question is worth 33 points; the remaining point is free. Be sure to substantiate your answers by citing the proper definitions, and by proving your assertions.

1. Let $f : \mathbb{R} \to \mathbb{R}$ be both quasiconcave and quasiconvex. Is f necessarily linear? Prove your answer.

2. Let $f : \mathbb{R}^2 \to \mathbb{R}$ be given by the rule $f(x, y) = 2x^3 - 15x^2 + 6xy + 2y^3 - 3y^2 + 27$. Find the global maximizers of $f(\cdot, \cdot)$.

3. Solve the problem: $Min(x_1^2 + x_2^2 - 6x_1 - 6x_2 + 18)$ subject to $4x_1 + x_2 \geq 14$.

4. Solve the problem $Max(x + 3y + 4w + 2xy - yw)$ subject to $x + y + w = 10$.