

Partial solutions for 3 4 6 5 29

3. Max at $(-1, 0)$ and $(1, 0)$. Min at $(0, -1)$ and $(0, 1)$
4. Max at $(3, 1)$ and min at $(-3, -1)$
6. Max at $(1, 1)$ and min at $(-1, 1)$
5. Max at $(-1, -2)$ and min at $(1, -2)$
29. $\nabla f = \langle y, x \rangle$. $\lambda \nabla g = \langle 2\lambda, 2\lambda \rangle$. Means $\lambda = 1/2y = 1/2x$ implies $x = y$.