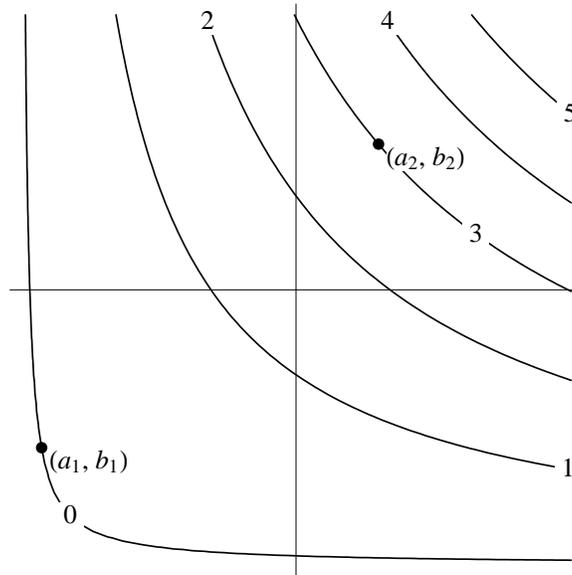# Partial Derivatives

Here is the level set diagram of a function $f(x, y)$. The value of f on each level set is labeled.

Based on the level set diagram, decide whether each of the statements should be true or false. (For which can you be totally sure, and for which would you need more information to be totally sure?)

1. $f_x(a_1, b_1) \geq 0$.

2. $f_y(a_2, b_2) \geq 0$.

3. $f_x(a_1, b_1) \geq f_x(a_2, b_2)$.

4. $f_{xx}(a_2, b_2) \geq 0$.

5. $f_{xy}(a_2, b_2) \geq 0$.