

Name:.....Serial#:.....Sec #:.....

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**Q.1:** Find and sketch the domain of the function  $f(x, y) = \sqrt{x^2 + y^2 - 1} + \ln(9 - x^2 - y^2)$ .

**Q.2:** Show that the limit  $\lim_{(x,y) \rightarrow (0,0)} \frac{4xy}{3x^2 + 5y^2}$  does not exist.

**Q.3:** Find all the second order partial derivatives of  $f(x, y) = \ln(3x - 5y)$ .