



LUND
UNIVERSITY

Analysis of Several Variables
Saturday November 19 2016
Duration: 08.00–13.00

Centre for Mathematical Sciences
Mathematics, Faculty of Science

Answers

1. The value of the integral is $\frac{5}{2}$.
2. The only extreme point is $(0, 0)$, a local minimum.
3. $y(0) = 2$, $y'(0) = 1/2$, $y''(0) = 0$.
4. The minimum is 0, the maximum is 2..
5. The value of the integral is $\frac{\pi}{2} \left(1 - \frac{1}{\sqrt{2}}\right)$.
6. Choose $\alpha = 1/2$ and $\beta = -1/3$. The solution is

$$f(x, y) = (2x + y)(3x - y) + G(2x + y) + F(3x - y),$$

where F and G are any twice differentiable functions of one variable.