



**LUND**  
UNIVERSITY

**MATB21 Flervariabelanalys 1**  
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Centre for Mathematical Sciences  
*Mathematics, Faculty of Science*

## **Answers 170816**

1. The only extreme value is  $f(1, 2) = 4$  (a local maximum).
2.  $\frac{2\pi a^5}{5} \left(1 - \frac{c}{\sqrt{c^2+1}}\right)$ .
3. a)  $\frac{1}{27}(40^{3/2} + 13^{3/2} - 16)$ .
4.  $\frac{\partial u}{\partial s} = \frac{\partial u}{\partial t}$ . The general solution is  $u(s, t) = F(s + t)$  or  $u(x, y) = F(\ln \sqrt{x^2 + y^2} + \arctan(y/x))$ .
6. The Taylor polynomial is  $P(x, y) = -\frac{x}{3} - \frac{2y}{3} - \frac{2x^2}{27} - \frac{8xy}{27} - \frac{8y^2}{27}$ .