



**LUND**  
UNIVERSITY

**Linear Algebra 2**  
**Saturday, 16 April 2016**  
**Duration: 08:00–13:00**

Centre for Mathematical Sciences  
*Mathematics, Faculty of Science*

## Answers

1.  $y = t^2 + \frac{1}{5}t + \frac{1}{5}$ .
2.  $\begin{bmatrix} x_1(t) \\ x_2(t) \end{bmatrix} = e^{-t} \begin{bmatrix} 10 \\ -4 \end{bmatrix} + e^{6t} \begin{bmatrix} 5 \\ 5 \end{bmatrix}$ .
3. Hyperboloid of two sheets.
4.  $U'$  is the plane  $x_1 - 2x_2 + x_3 = 0$ .  $U''$  is the line  $\mathbf{x} = t(1, -1, -2)$ .
6. b) E.g.  $\frac{1}{\sqrt{2}} \begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$ ,  $\frac{1}{\sqrt{2}} \begin{bmatrix} 0 & 0 \\ 1 & 1 \end{bmatrix}$ ,  $\frac{1}{2} \begin{bmatrix} 1 & -1 \\ 1 & -1 \end{bmatrix}$ .