



LUND
UNIVERSITY

Centre for Mathematical Sciences
Mathematics, Faculty of Science

Linear Analysis
Thursday, 20 August 2015
Duration: 8:00–13:00

Answers

1. $u(x, t) = \frac{3}{4}e^{-9t} \sin 3x - \frac{1}{4}e^{-81t} \sin 9x.$
2. All three series are convergent.
3. a) $\frac{e^\pi - e^{-\pi}}{2\pi} \sum_{-\infty}^{\infty} \frac{(-1)^n e^{inx}}{1+n^2}.$
b) $\frac{1}{2} + \frac{\pi}{2} \cdot \frac{e^\pi + e^{-\pi}}{e^\pi - e^{-\pi}} = \frac{1 + \pi \coth \pi}{2}.$
4. $y = x - \frac{5x^3}{3}.$