TMA4100 Matematikk 1 — Høst 2007
Auditorieøving 14. Uke 47
Fasit

1. $P_3(x) = 1 + \frac{1}{2}(x-1) - \frac{1}{8}(x-1)^2 + \frac{1}{16}(x-1)^3$. $P_3(1,1) = 16782/16000$. $|R_3(1,1)| \leq 1/256000$.

2. Rekken begynner med

$$1 + \frac{1}{2}x + \frac{3}{8}x^2 + \frac{5}{16}x^3 + \frac{35}{128}x^4 + \frac{63}{256}x^5.$$

3. $y_0 = 1$, $y_1 = -\frac{3}{2} - x + \frac{3}{2}x^2$, $y_2 = \frac{3}{2}x + 2x^2 - \frac{1}{2}x^3$, $y_3 = -\frac{25}{24} + \frac{3}{4}x^2 - \frac{2}{3}x^3 + \frac{1}{8}x^4$.

4. (a) $y = e^{-x} + 2Ce^{-2x}$,   (b) $y = Ce^{(\ln^2 x)/2}$

5. (a) $v = 5e^{2t} - 2$,   (b) $y = x + 4/x^2$

6. $y(0,2) \approx y_2 = 2,288$