Matematisk modellering og numeriske metoder
Opgaver til Lektion 3

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Exercise 1

1. $y(x) = (x + c)e^{-kx}$
2. $y(x) = (x + c)e^{\cos(x)}$, $c = -\frac{2.5}{e}$
3. $y(t) = \frac{1}{4}t^2 - \frac{1}{3}t + \frac{1}{2} + \frac{c}{t^2}$
4. $y(x) = x\ln(cx)$
5. $y(x) = cx^3 - x^2$
6. $y(t) = 1 - x^2 + ce^{-x^2}$

Exercise 2

$y(x) = 3\cos(2.5x) - \sin(2.5x)$

Exercise 3

$y(x) = c_1e^{5x} + c_2e^{-5x}$

Exercise 4

$a = 2\sqrt{5}$ and $b = 5$

Exercise 5

$y(x) = \frac{3}{5}e^{4x} + \frac{7}{5}e^{-x}$

Exercise 6

$y(x) = e^{-x}$ and $y(x) = 0.001e^x + e^{-x}$