

LF 8

Oppg ave 1: $-t, \frac{1-\cos(at)}{a}, \frac{1}{a-b} (e^{at} - e^{bt}), t, \frac{\cos(at)\sin(at)}{a}, \frac{\sin(at)}{a}, e^{-t} + t - 1$

Oppg ave 2: a) $x(t) = e^{-at}(1 + u(t))$ b) $x(t) = e^{-at}$, c) $x(t) = e^{-at} + \frac{1}{a} (1 - e^{-at}) u(t)$, d) $x(t) = \frac{1}{1+a} (e^t + ae^{-at})$

Oppg ave 3: a) $x(t) = 2e^{-t} - e^{-2t} + (e^{-t} - e^{-2t}) u(t)$ b) $x(t) = 2e^{-2t} - e^{-2t}$ c) $x(t) = 2e^{-2t} - e^{-2t} + \frac{1}{2} (-2e^{-t} + e^{-2t} + 1) u(t)$ d) $x(t) = \frac{1}{10} (\cos(t) + 3\sin(t)) + \frac{3}{2} e^{-t} - \frac{3}{5} e^{-2t}$

Oppg ave 4: a) $x(t) = te^{-2t}$ b) $x(t) = 0$ c) $x(t) = \frac{1}{4} (1 - 2te^{-2t} - e^{-2t}) u(t)$ d) $x(t) = \frac{1}{25} (3\sin(t) - 4\cos(t) + 4e^{-2t} - te^{-2t})$

Oppg ave 5: a) $x(t) = (1 + u(t))2e^t \sin(t)$ b) $x(t) = 2e^t \sin(t)$ c) $x(t) = 2e^t \sin(t) + \frac{1}{2} (1 + e^t \sin(t) - e^t \cos(t)) u(t)$ d) $x(t) = \frac{11}{5} e^t \sin(t) - \frac{2}{5} e^t \cos(t) + \frac{2}{5} \cos(t) + \frac{1}{5} \sin(t)$

Oppg ave 6: a) $y(t) = \sin(2t)$ b) $y(t) = \frac{1}{2} (e^t - e^{-t})$

Oppg ave 7: a) $\frac{6}{7} (e^{4t} - e^{-3t})$, b) te^{at} , c) $\frac{1}{2} (e^{2t-2a} - 1)$, d) $10\sin(t) - 2\sin(5t)$