

1. Compute the convolution of e^{-2t} and e^{-3t} .
2. Compute the convolution of e^{at} and e^{bt} for any nonzero constants a and b .
3. Compute the convolution of e^{-t} and 1.
4. Compute the convolution of e^{-t} and t .
5. Compute the convolution of e^{-t} and t^2 .
6. Compute the convolution of e^{-t} and $\cos t$.
7. Compute the convolution of e^{-t} and $\sin t$.
8. Compute the convolution of $\cos 2t$ and $\sin t$.
9. Compute the convolution of $\cos 2t$ and $\sin 2t$.
10. Use the techniques from class ($e(t)$, etc.) to solve these initial value problems:
 - (a) $y'' + y = g(t)$, $y(0) = 1$, $y'(0) = 0$
 - (b) $y'' - 5y' + 4y = g(t)$, $y(0) = 1$, $y'(0) = -1$
 - (c) $y'' + 4y' + 3y = g(t)$, $y(0) = -2$, $y'(0) = 3$
 - (d) $y'' + 2y' + 2y = g(t)$, $y(0) = 1$, $y'(0) = -2$