7.2.42.

$$L^{-1}\left\{\frac{s-a}{(s-a)^2+b^2}\right\} = e^{at}\cos bt$$

$$L^{-1}\left\{\frac{b}{(s-a)^2+b^2}\right\} = e^{at}\sin bt$$

$$y' + y = e^{-3t}\cos 2t \ , \ y(0) = 0$$

Laplacetransformera.

$$sY(s) - y(0) + Y(s) = \frac{s+3}{(s+3)^2+2^2}$$

$$Y(s) = \frac{s+3}{(s+1)(s^2+6s+13)}$$

$$Y(s) = \frac{\frac{1}{4}}{s+1} + \frac{Bs+C}{s^2+6s+13}$$

$$B = -\frac{1}{4}\ ,\ C = -\frac{1}{4}$$

$$Y(s) = \frac{1}{4}\left(\frac{1}{s+1} - \frac{s+1}{s^2+6s+13}\right)$$

$$Y(s) = \frac{1}{4}\left(\frac{1}{s+1} - \frac{s+3}{(s+3)^2 + 2^2} + \frac{2}{(s+3)^2 + 2^2}\right)$$

Återtransformera.

$$y(t) = \frac{1}{4}\left(e^{-t} - e^{-3t}\cos 2t + e^{-3t}\sin 2t\right)$$