zad. 1

$$y''' + p(t)y'' + q(t)y' + r(t)y = 0$$

1° $y = t \rightarrow \quad q(t) + r(t)t = 0$

2° $y = e^t \rightarrow \quad e^t(1 + p + q + r) = 0$

3° $y = te^t \rightarrow (t+3)e^t + (t+2)e^t p + (t+1)e^t q +$
$+ te^t \cdot r = 0$

$$\Downarrow$$

$$\begin{cases} q + rt = 0 \rightarrow q = -rt \\ 1 + p + q + r = 0 \rightarrow 1 + p - rt + r = 0 \rightarrow p = rt - r - 1 \\ t + 3 + (t+2)p + (t+1)q + tr = 0 \end{cases}$$

$$\Downarrow$$

$$t + 3 + (t+2)(rt - r - 1) + (t+1)(-rt) + tr = 0$$

$$t + 3 + rt^2 - rt - t + 2rt - 2r - 2 - rt^2 - rt + t = 0$$

$$-2r + 1 = 0$$

$$r = \frac{1}{2}$$

$$\Downarrow$$

$$q = -\frac{1}{2}t$$

$$\Downarrow$$

$$p = \frac{1}{2}t - \frac{3}{2}$$