## 3.2 $\mu Q = 0 \iff \mu$ stationäre Verteilung

• 
$$P'(t) = P(t)Q = QP(t)$$

• 
$$\implies P(t) = E + Q \int_0^t P(s) ds = E + \int_0^t P(s) ds Q$$

• 
$$\implies \mu = \mu P(t) = \mu + \int_0^t \mu P(s) ds Q = \mu + t \cdot (\mu Q) = \mu$$

## 3.3 Solidaritätsprinzip

irekurrent,  $j \in K(i),$ also $\exists m,n \in \mathbb{N}: p_{ij}^(m)p_{ji}^{(n)} > 0.$  Dann

$$\sum_{k=0}^{\infty} p_{jj}^{(k)} \geq \sum_{k=0}^{\infty} p_{jj}^{(n+m+k)} \geq \sum_{k=0}^{\infty} p_{ji}^{(n)} p_{ii}^{(k)} p_{ij}^{(m)} = p_{ij}^{(m)} p_{ji}^{(n)} \sum_{k=0}^{\infty} p_{ii}^{(k)} = \infty$$

## 4 Verteilungen

• 
$$\mathcal{N}(0, \sigma^2)$$
:  $f(x) = \frac{1}{\sigma\sqrt{2\pi}} \exp(-\frac{1}{2}(\frac{x}{\sigma})^2)$ 

• Exp(
$$\lambda$$
):  $f(x) = \lambda e^{-\lambda x}$ ,  $F(x) = 1 - e^{-\lambda x}$ ,  $EX = \frac{1}{\lambda}$ ,  $Var X = \frac{1}{\lambda^2}$ .

• 
$$\mathcal{P}o(\lambda)$$
:  $P(X=k) = \frac{\lambda^k}{k!}e^{-\lambda}$ ,  $EX = \text{Var } X = \lambda$ .