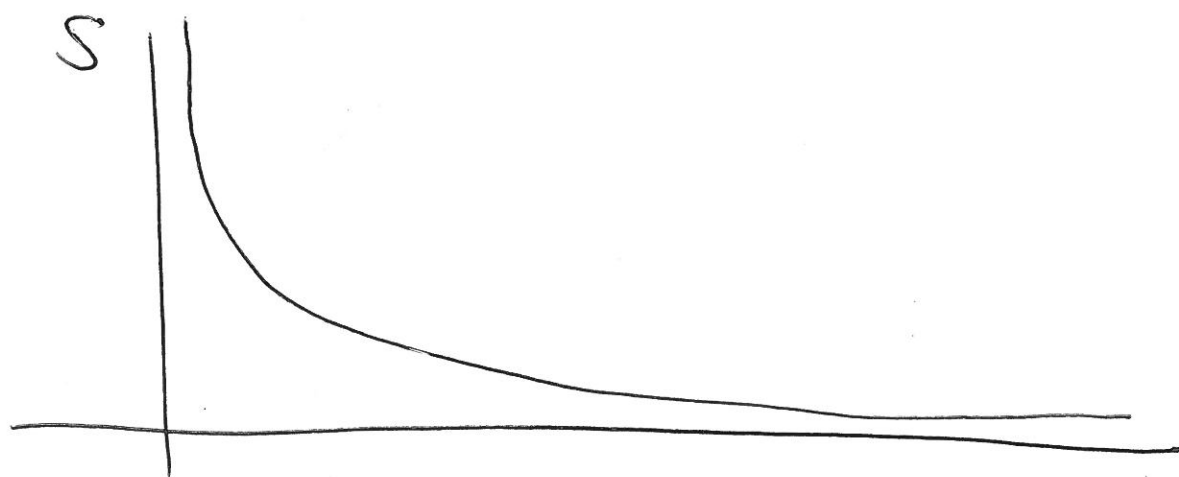


Power transformations

$$S = \gamma_0 \omega^{\gamma_1}$$

↑ Survival time
↑ white blood cell count

when $\gamma_0 > 0$, $\gamma_1 < 0$ these curves look like:



to "linearise" this relationship we take logs of both sides

$$\begin{aligned} \ln S &= \ln \gamma_0 + \gamma_1 \ln \omega \\ &= \beta_0 + \beta_1 \ln \omega \end{aligned}$$

Gamma distribution when $\alpha = 1$

$$\begin{aligned} f_{\alpha=1, \beta}(y) &= \frac{\beta^1}{\Gamma(1)} y^{1-1} e^{-\beta y} \\ &= \beta e^{-\beta y} \end{aligned}$$

(exponential distribution)