# VaR and the Pareto distribution

Dr. Arturo Erdely – Risk Theory I

**Exercise 1.5** Let $S$ be a Pareto random variable with probability density function:

$$f(s\,|\,\beta) = \frac{\beta}{s^{\beta+1}}\mathbb{1}_{\{s>1\}}$$

with parameter $\beta > 0$. Then for any given $0 < \alpha < 1$ there exists a $\beta > 1$ such that $\mathbb{E}(S) > \mathbf{VaR}_\alpha(S)$.

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S = Distributions.Pareto{Float64}(α=1.0527, θ=1.0)
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VaR of level α = 0.95

β = 1.0527