**4ST630 homework 6**

**Evaluation: 0 - 10 points**

**Due to: your (first) final test date**

In insurance we frequently use the Pareto distribution as a model for large claims.

Its density (with the tail parameter and scale parameter is given as (*α*, *θ* > 0)

You can apply formulas

Select arbitrarilyand

* Plot the density and the cumulative distribution function of your selected distribution.
* Calculate and highlight expected value and median in the plots above. Calculate standard deviation.
* Plot densities of the minimum values (*Y*1 )andmaximum values (*Y*n )in samples of sizes 10, 20, 30, 40 and 50.
* Compare the medians of *X* (selected distribution), *Y*1 and*Y*n (both for sample sizes from previous points – arrange in a table).
* Suppose to be known (and equal to your selected value).
  + Evaluate maximum likelihood estimate of
  + Evaluate the moment estimate of use the equation
  + Evaluate the quantile estimate of use the equation