1 Continuous powerlaw with minimum cut-off

Exponent $\tau > 1$.

1.1 Also maximum cut-off

Let m be the minimum, M be the maximum.
PDF:

$$f(x) = \frac{\tau - 1}{m^{-(\tau-1)} - M^{-(\tau-1)}} x^{-\tau}$$

CDF:

$$F(x) = \frac{m^{-(\tau-1)} - x^{-(\tau-1)}}{m^{-(\tau-1)} - M^{-(\tau-1)}}$$

Inverse:

$$F^{-1}(y) = \left((1-y)m^{-(\tau-1)} + yM^{-(\tau-1)}\right)^{\frac{-1}{\tau-1}}$$

i.e. linear interpolate between $M^{-(\tau-1)} < m^{-(\tau-1)}$.
$F^{-1}(0) = m$ and $F^{-1}(1) = M$.

For $m = 1$ and M steps of interpolation:
$F^{-1}(1/M) = \left(1 - M^{-1} + M^{-\tau}\right)^{\frac{-1}{\tau-1}}$
$F^{-1}(1 - 1/M) = \left(M^{-1} + M^{-(\tau-1)} - M^{-\tau}\right)^{\frac{-1}{\tau-1}}$

1.2 No maximum cut-off

For $M = \infty$ we have:
PDF:

$$f(x) = \frac{\tau - 1}{m^{-(\tau-1)}} x^{-\tau} = \frac{\tau - 1}{m} \left(\frac{x}{m}\right)^{-\tau}$$

CDF:

$$F(x) = \frac{m^{-(\tau-1)} - x^{-(\tau-1)}}{m^{-(\tau-1)}} = 1 - \left(\frac{x}{m}\right)^{-(\tau-1)}$$

Inverse:

$$F^{-1}(y) = \left((1-y)m^{-(\tau-1)}\right)^{\frac{-1}{\tau-1}} = m\ (1-y)^{\frac{-1}{\tau-1}}$$

For interpolation:
$F^{-1}(0) = m$
$F^{-1}(1 - \frac{1}{n}) = m \cdot n^{\frac{1}{\tau-1}}$