Binomiális eloszlások: $X \sim \mathrm{Bin}(n,p)$, ha
$f_X(k) = \binom{n}{k} p^k q^{n-k}$, $k = 0, 1, \ldots n$, $0 < p < 1$, $q = 1 - p$.
$E(X) = np, V(X) = npq$, $M_X(t) = (pe^t + q)^n$, $P_X(t) = (pt + q)^n$.
$a = -p/q$, $b = p(n+1)/q$.

Geometriai eloszlások: $X \sim \mathrm{Geom}(p)$, ha
$f_X(k) = pq^k$, $k = 0, 1, \ldots$, $0 < p < 1$, $q = 1 - p$.
$a = q$, $b = 0$, $E(X) = q/p$ és $V(X) = q/p^2$,

$$M_X(t) = \frac{p}{1 - qe^t}, \quad P_X(t) = \frac{p}{1 - qt}, \quad t < \ln(1/q).$$

Negatív binomiális eloszlások: $X \sim \mathrm{NB}(r,p)$, ha

$$f_X(k) = \binom{k + r - 1}{k} p^r q^k,$$

$k = 0, 1, \ldots$, $r > 0$, $0 < p < 1$, $q = 1 - p$.
$E(X) = rq/p$, $V(X) = rq/p^2$, $a = q$, $b = (r-1)q$.

$$M_X(t) = \left(\frac{p}{1 - qe^t}\right)^r, P_X(t) = \left(\frac{p}{1 - qt}\right)^r, \quad t < \ln(1/q).$$

Poisson eloszlások: $X \sim \mathrm{Poi}(\lambda)$, ahol $\lambda > 0$, ha

$$f_X(k) = \frac{\lambda^k e^{-\lambda}}{k!}, k = 0, 1, \ldots.$$

$E(X) = V(X) = \lambda$, $a = 0$, $b = \lambda$.
$M_X(t) = \exp(\lambda(e^t - 1))$, $P_X(t) = \exp(\lambda(t - 1))$.

Logaritmus eloszlások: $X \sim \mathrm{Log}(p)$, ha

$$f_X(k) = \frac{-1}{\ln(1-p)} \cdot \frac{p^k}{k}, \quad k = 1, 2, \ldots, \quad 0 < p < 1.$$

$X \sim (p, -p, 1)$, $E(X) = \dfrac{1}{\ln(1-p)} \cdot \dfrac{p}{p-1}$, $M_X(t) = \dfrac{\ln(1 - pe^t)}{\ln(1-p)}$, ha $t < -\ln p$.