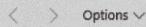
isses and dispersive groundwater flow

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## Pearson Type III Distribution



A skewed distribution which is similar to the binomial distribution when  $p \neq q$  (Abramowitz and Stegun 1972, p. 930).

$$y = k (t + A)^{A^2 - 1} e^{-A t}$$

for  $t \in [0, \infty)$  where

$$A \equiv 2/\gamma$$

$$K \equiv \frac{A^{A^2} e^{-A^2}}{\Gamma(A^2)}$$

 $\Gamma$  (z) is the gamma function, and T is a standardized variate. Another form is

$$P(x) = \frac{1}{\beta \Gamma(p)} \left( \frac{x - \alpha}{\beta} \right)^{p-1} \exp\left( -\frac{x - \alpha}{\beta} \right).$$

 $\beta \sim \frac{1}{a}$ 

For this distribution, the characteristic function is

$$\phi(t) = e^{i\alpha t} (1 - i\beta t)^{-p}$$

XN (b)

and the mean, variance, skewness, and kurtosis excess are

$$\mu = \alpha + p\beta \qquad \Rightarrow = \hat{b} + \hat{n}/\hat{a} = mu \quad (mean)$$

$$\gamma_1 = \frac{2}{\sqrt{p}} \qquad \Rightarrow = \hat{n}/\hat{a}^2 \Rightarrow \sigma = \sqrt{n}/\hat{a} = sigma \quad (standard deviation)$$

$$\gamma_2 = \frac{6}{p} \qquad \Rightarrow = \frac{2}{\sqrt{n}} = gamma \quad (skew)$$