Q-Q plots

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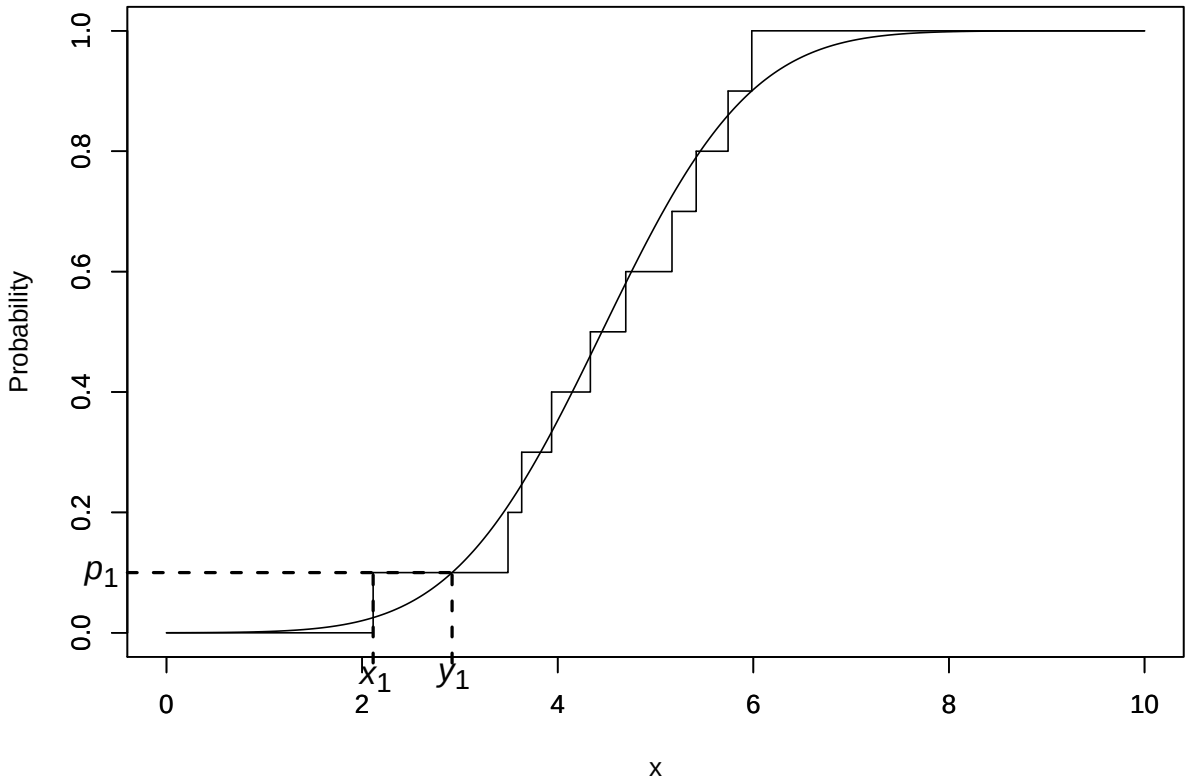
Algorithm

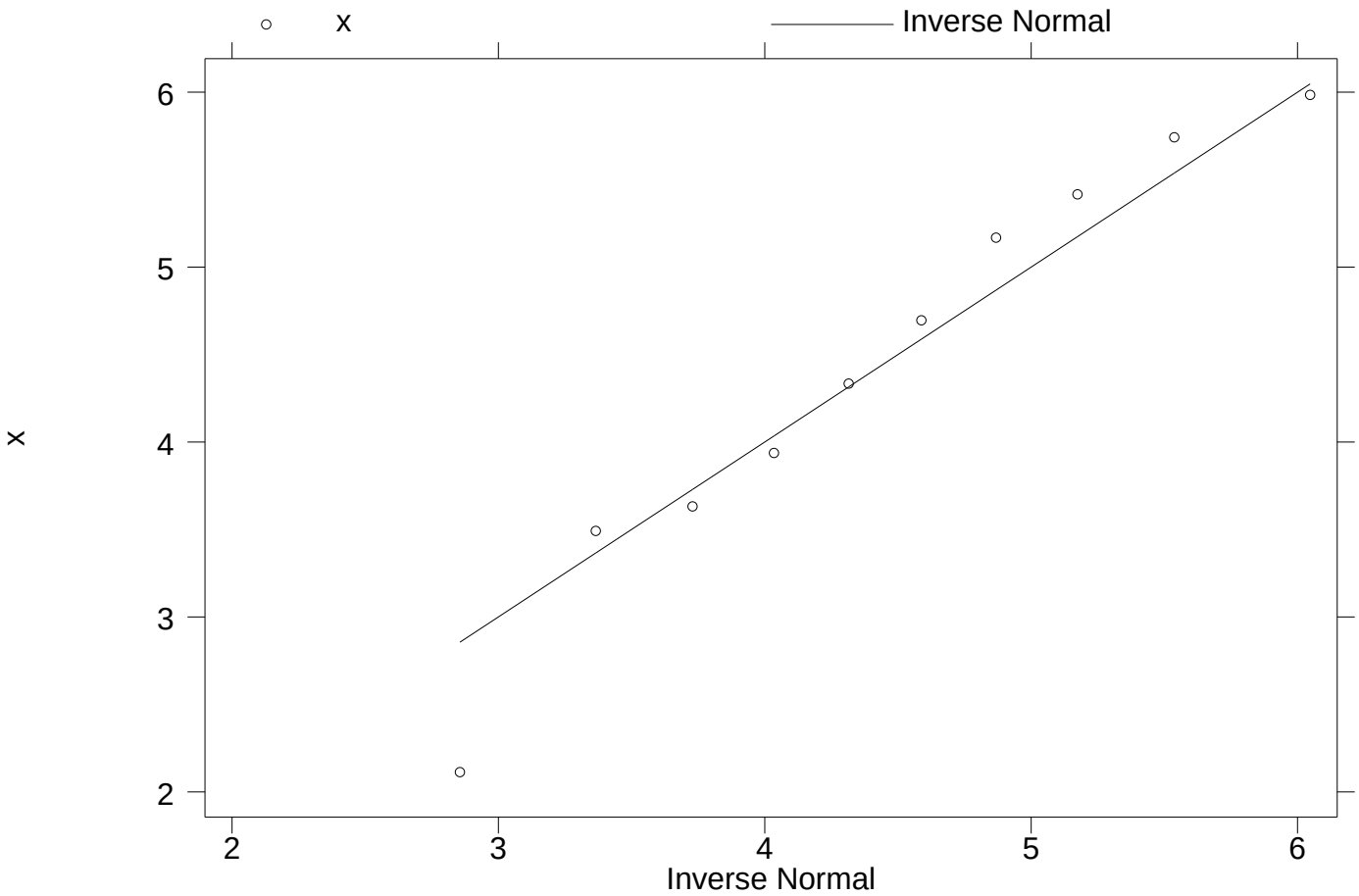
The following steps create a Quantile-Quantile-plot (Q-Q-plot)

1. Rank your data in ascending order: $x_1, x_2, \ldots, x_n$
2. For each data point x_i compute the empirical percentiles p_i of data points smaller than or equal to x_i, ie. $p_i = \frac{i}{n}$
3. Define a theoretical matching normal distribution as the normal distribution with the same mean and variance as the sample
4. For each percentile p_i find the corresponding quantile y_i in the theoretical normal distribution
5. Plot y_i against x_i
6. If $x_i = y_i$ for all i we get a straight line indicating that the x_i's are normally distributed

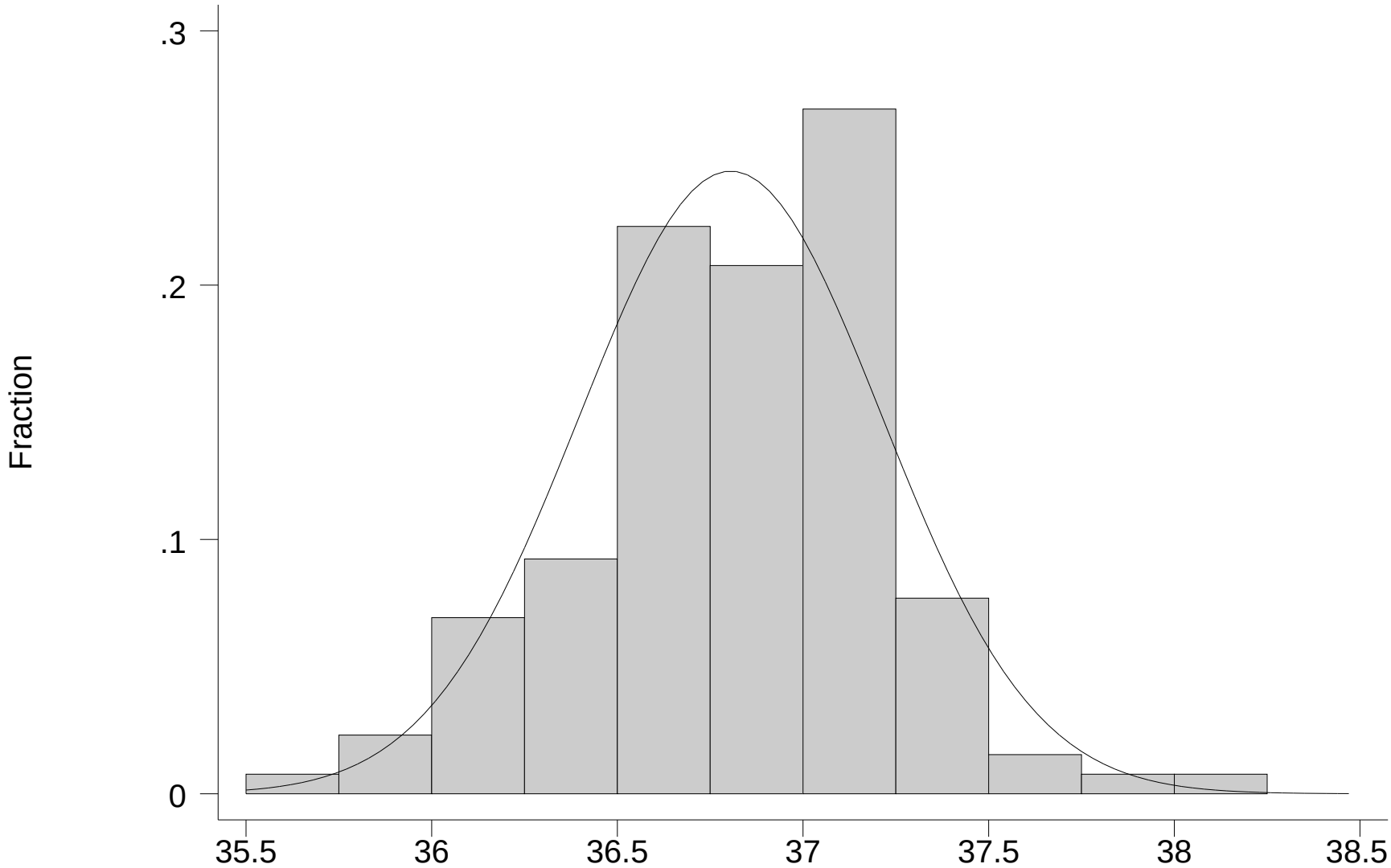
Empirical and theoretical distribution function



Q-Q-plot



Histogram



Q-Q-plot