

ABSTRACT

RANTIKA TRESNA LUKITASARI, 3125151001. System Reliability Analysis with Weibull Distribution. Thesis. Faculty of Mathematics and Natural Science. State University of Jakarta. 2020.

This thesis discusses about the reliability of the system having Weibull lifetime distribution. Issues discussed are the influence of parameter values on the reliability function, the properties of system reliability, such as the hazard function and the average failure time of a component or system, and looking for the relationship between the probability density function, cumulative distribution function, reliability function, and hazard function. In addition, this thesis also discusses estimation of parameters of the Weibull distribution with the maximum likelihood method using a numerical approach with the Newton-Raphson method.

Keywords : system reliability, Weibull distribution, hazard function, maximum likelihood method, Newton-Raphson method.

ABSTRAK

RANTIKA TRESNA LUKITASARI, 3125151001. Analisis Reliabilitas Sistem dengan Distribusi Weibull. Skripsi. Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Jakarta. 2020.

Skripsi ini membahas mengenai reliabilitas sistem dengan distribusi Weibull. Hal-hal yang dibahas adalah pengaruh nilai parameter terhadap fungsi reliabilitas, sifat-sifat dari reliabilitas sistem, seperti fungsi *hazard* dan rata-rata waktu kegagalan suatu komponen atau sistem, serta mencari hubungan antara fungsi kepadatan probabilitas, fungsi distribusi kumulatif, fungsi reliabilitas, dan fungsi *hazard*. Selain itu, di dalam skripsi ini juga membahas estimasi parameter dari distribusi Weibull dengan metode maksimum *likelihood* yang menggunakan pendekatan secara numerik dengan metode Newton-Raphson.

Kata kunci : reliabilitas sistem, distribusi Weibull, fungsi *hazard*, metode maksimum *likelihood*, metode Newton-Rapson.