Assignment 2_Week2

Due on 2019-08-23, 23:59 IST.

Problem 1.
(a) A normal distribution with mean $\mu = 100$ and standard deviation $\sigma = 15$. Find the probability of a value being less than 105.

Problem 2.
(b) A standard normal distribution. Find the value of $z$ that corresponds to the 90th percentile.

Problem 3.
(c) A t-distribution with 20 degrees of freedom. Find the critical value for a 95% confidence interval.

Problem 4.
(d) A chi-square distribution with 5 degrees of freedom. Find the value of $\chi^2$ that corresponds to the 90th percentile.

Problem 5.
(e) A F-distribution with 3 and 10 degrees of freedom. Find the critical value for a 90% confidence interval.

Problem 6.
(f) A binomial distribution with $n = 10$ and $p = 0.5$. Find the probability of getting exactly 5 successes.

Problem 7.
(g) A Poisson distribution with mean $\lambda = 10$. Find the probability of getting exactly 5 successes.

Problem 8.
(h) An exponential distribution with rate $\lambda = 5$. Find the probability of the time until the first event occurring.

Problem 9.
(i) A gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the probability density function.

Problem 10.
(j) A Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.

Problem 11.
(k) A log-normal distribution with mean $\mu = 10$ and standard deviation $\sigma = 2$. Find the probability of a value being less than 15.

Problem 12.
(l) A logistic distribution with mean $\mu = 0$ and standard deviation $\sigma = 1$. Find the probability of a value being less than 0.5.

Problem 13.
(m) A Cauchy distribution with location $\mu = 0$ and scale $\gamma = 1$. Find the probability density function.

Problem 14.
(n) A Bessel distribution with parameter $n = 2$. Find the probability density function.

Problem 15.
(o) A hypergeometric distribution with $n = 10$, $N = 20$, and $K = 5$. Find the probability of getting exactly 3 successes.

Problem 16.
(p) A geometric distribution with $p = 0.3$. Find the probability of the first success occurring on the third trial.

Problem 17.
(q) A negative binomial distribution with $r = 2$ and $p = 0.5$. Find the probability of getting exactly 3 failures before the second success.

Problem 18.
(r) A beta distribution with parameters $\alpha = 2$ and $\beta = 3$. Find the probability density function.

Problem 19.
(s) A Pareto distribution with $k = 3$ and $\theta = 2$. Find the cumulative distribution function.

Problem 20.
(t) A skewed-normal distribution with mean $\mu = 10$, standard deviation $\sigma = 5$, and skewness parameter $\gamma = 2$. Find the probability of a value being less than 12.

Problem 21.
(u) A discrete uniform distribution with $n = 6$. Find the probability of getting exactly 3 successes.

Problem 22.
(v) A discrete triangular distribution with parameters $a = 1$, $b = 6$, and $c = 5$. Find the cumulative distribution function.

Problem 23.
(w) A discrete exponential distribution with rate $\lambda = 2$. Find the probability of the time until the first event occurring.

Problem 24.
(x) A discrete gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the probability density function.

Problem 25.
(y) A discrete Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.

Problem 26.
(z) A discrete log-normal distribution with mean $\mu = 10$ and standard deviation $\sigma = 2$. Find the probability density function.

Problem 27.
(aa) A discrete gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the cumulative distribution function.

Problem 28.
(bb) A discrete Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.

Problem 29.
(cc) A discrete log-normal distribution with mean $\mu = 10$ and standard deviation $\sigma = 2$. Find the probability density function.

Problem 30.
(dd) A discrete gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the cumulative distribution function.

Problem 31.
(ee) A discrete Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.

Problem 32.
(ff) A discrete log-normal distribution with mean $\mu = 10$ and standard deviation $\sigma = 2$. Find the probability density function.

Problem 33.
(gg) A discrete gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the cumulative distribution function.

Problem 34.
(hh) A discrete Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.

Problem 35.
(ii) A discrete log-normal distribution with mean $\mu = 10$ and standard deviation $\sigma = 2$. Find the probability density function.

Problem 36.
(jj) A discrete gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the cumulative distribution function.

Problem 37.
(kk) A discrete Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.

Problem 38.
(ll) A discrete log-normal distribution with mean $\mu = 10$ and standard deviation $\sigma = 2$. Find the probability density function.

Problem 39.
(mm) A discrete gamma distribution with shape $k = 2$ and scale $\theta = 3$. Find the cumulative distribution function.

Problem 40.
(nn) A discrete Weibull distribution with shape $k = 2$ and scale $\lambda = 5$. Find the cumulative distribution function.