

True/False - No explanation needed. (For each: 1 point if correct, 0 points if not answered, -1 points if incorrect)

1. The recurrence relationship $\Gamma(n) = (n - 1)\Gamma(n - 1)$ and the fact that $\int_0^\infty e^{-t} dt = 1$ implies that $\Gamma(n) = (n - 1)!$ for all $n \geq 1$ True/False
2. In a t-distribution, the degrees of freedom ν are 1 fewer than the number of measurements x_1, \dots, x_n because, even though σ_0 may be unknown, it is fixed for X , thereby yielding a quadratic relation between the x_i 's and the sample mean \bar{x} . True/False

Problems - Needs justification.

1. I have a coin that I believe to be fair. If I flip it 20 times and get 15 heads, can I reject my null hypothesis with significance level $\alpha = .05$? Use a χ^2 statistic. (10 points)