2. We will use an unpaired t-test for this question because it is used to compare two population means. We chose t-test because we know that these two samples are from normal distributions, but the parameters are unknown.

According to the information given, we can test the below hypothesis

Ho: μ0 - μn ≤ 0

Which means that the new process doesn’t reduce the defect rate

Ha: μo - μn > 0

Which means that the new process reduces the defect rate (switch to the new process)

Because the two samples have different variances, we use the below formula to calculate the test statistics. This gives us a t-stat of 1.186

d.f. = no + nn – 2 = 20 + 14 – 2 = 32

With an α = 0.05 and d.f. = 32, we know that the critical value is 1.694. Because our t-stat is smaller than the critical value, meaning that we fail to reject the null, there is no significant evidence to claim that the new process reduces the defect rate.