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| --- | --- | --- | --- |
| **Properties** | **z-test** | **t-test** | **Unpaired t-test** |
| **Objective** | Tests population mean | Tests population mean | Compare mean of two different populations |
| **Condition** | Large sample size (>50) or population variance is known | Small sample size (<50) and population variance is unknown | None |
| **Hypothesis** | Where is a constant | Where is a constant | Where is a constant |
| **Critical Values** |  |  |  |
| **Z-score and t scores** | Derived from normal distribution | Derived from Student t-distribution with n-1 degrees of freedom | Derived from Student t-distribution with  degrees of freedom |
| **Fail to reject null if** | or sample mean  is in between critical values | or sample mean  is in between critical values | or sample mean of difference  is in between critical values |

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| --- | --- | --- | --- |
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| **Fail to reject null if** | or sample mean  is less than critical value | or sample mean  is less than critical value | or sample mean of difference  is less than critical value |