ASQ CRE Prep course

Lesson V. C. 1. b.

Qualification/Demonstration Testing – Success Testing

Beta Distribution & table

- **Given sample size and number of failures and desired confidence**
- **Find lower bound**
- **Can also use to design test**

			γ			
n	r	n - r	0.50	0.75	0.90	0.95
1	0	1	.293	.134	.051	.025
	1	0	.707	.500	.316	.224
2	0	2	.206	.092	.034	.017
	1	1	.500	.326	.196	.135
	2	0	.794	.630	.464	.368
3	1	2	.386	.243	.142	.098
	2	1	.614	.456	.320	.249
	3	0	.841	.707	.562	.473
4	2	2	.500	.359	.247	.189
	3	1	.686	.546	.416	.343
	4	0	.871	.758	.631	.549

Beta Distribution Example

- **Given:**
  - **4 samples tested**
  - **0 failures**
- **What is lower 95% confidence bound for reliability?**

Sample Size Calculation

- **Beta with zero failures**
- **Binomial with zero failures**

$$n = \frac{\ln(1-C)}{\ln(R)}$$

What is lost by using pass/fail approaches?

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Lesson V. C. 2.

Product Reliability Acceptance Testing (PRAT)