

## Linear Combination, Product and Ratio of Normal and Logistic Random Variables

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*Abstract:* The distributions of linear combinations, products and ratios of random variables arise in many areas of engineering. In this note, the exact distributions of  $\alpha X + \beta Y$ ,  $|XY|$  and  $|X/Y|$  are derived when  $X$  and  $Y$  are independent normal and logistic random variables. The normal and logistic distributions have been two of the most popular models for measurement errors in engineering.

*Keywords:* linear combination of random variables; logistic distribution; normal distribution; products of random variables; ratios of random variables;

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