**807 Properties of Logarithms**

2x = 2y then …

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log2x = log2y then …

1) **EQUALITY** – If both sides have one log with the same base then what they are taking the log of must be equal.

EX log2x= log27, then x = 7

2) **PRODUCT** – If a logarithm contains multiplication then it could be split into two logs separated by addition

If two logs are separated by addition they can be combined into one log with multiplication

EX log2(5x)= log25 + log2x

3) **QUOTIENT** – If a logarithm contains division then it could be split into two logs separated by subtraction

If two logs are separated by subtraction they can be combined into one log with division.

EX log2(x/3)= log2x – log23

4) **POWER** – If a logarithm contains an exponent then the exponent could be rewritten as a multiple of the log

If a logarithm is being multiplied by a value then that value can be rewritten as an exponent on the inside of the logarithm

EX log2x4= 4log2x