

Math 16B
Kouba
Rules for Exponents and the Number e

RECALL: The Rules for Exponents

1.) $x^m \cdot x^n =$

2.) $(x^m)^n =$

3.) $(xy)^m =$

4.) $\frac{x^m}{x^n} =$

5.) $\left(\frac{x}{y}\right)^m =$

6.) $x^{-m} =$

THE NUMBER e (attributed to Leonhard Euler, Swiss Mathematician (1707-1783))

EXAMPLE: Evaluate $(1 + 1/k)^k$ for the following values of k .

k	$(1 + 1/k)^k$
1	2.00000 ...
10	2.59374 ...
100	2.70841 ...
1000	2.71692 ...
10,000	2.71814 ...
100,000	2.71826 ...
1,000,000	2.71828 ...
10,000,000	2.71828 ...

CONCLUSION: $\lim_{k \rightarrow \infty} (1 + 1/k)^k = e \approx 2.71828$.