History -- Napier, the Bernoulli Brothers, Euler & Others   https;//www.mathnstuff.com/math/xls/exp.xlsx

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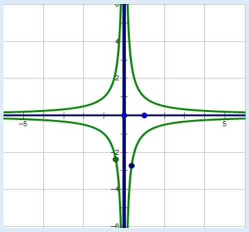
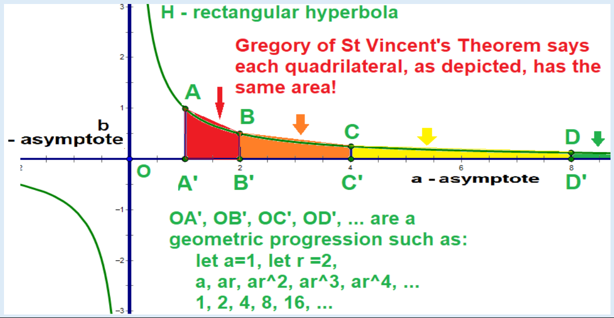
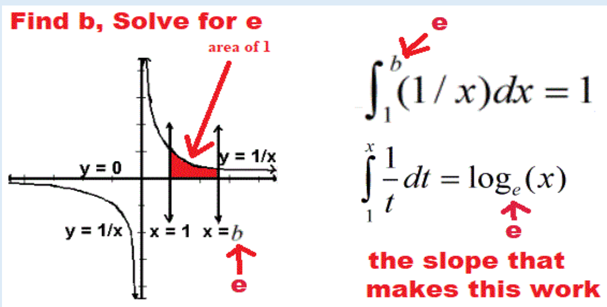
year	notation used	mathematician	area of use
1618	In used but not recognized	Napier	a table of logs of numbers
1624	log, base 10, of e (e not named)	Briggs	a numerical approximation of log, base 10, of e
1647		Gregory of Saint-Vincei	the area under a rectangular hyperbola by "exaustion"





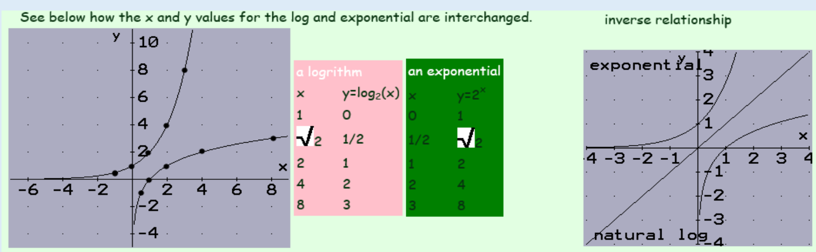
year	notation used	mathematician	area of use
1661		Huygens	the relationship between the area under the rectangular hyperbola xy=1 and the logarithm



defined a curve, y=ak^x, which he called logarithmic and we now call exponential

year	notation used	mathematician	area of use
1668	ımed log base e the natural log, but did not name	Nicholas Mercator	the series expansion of log(1+x)
1683		Jacob Bernoulli	continuous compound interest & the limit used to define e
			understood that log and exponential were inverses of each other

$$e = \lim_{n \to \infty} (1 + \frac{1}{n})^n$$



year	notation used	mathematician	area of use
1690	e appears, but as a b, not an e	Leibniz	
1697		Johann Bernoulli	calculation of exponential series using term by term integration
1731	named as the base	Euler	

e approximation 2. 7 1828 1828 45 90 45 2 35

$$e = 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \frac{1}{5!} + \frac{1}{6!} + \frac{1}{7!} + \frac{1}{8!} + \frac{1}{9!} + \frac{1}{10!} + \frac{1}{11!} + \frac{1}{12!} + \frac{1}{13!} + \frac{1}{14!} + \frac{1}{15!} + \frac{1}{16!} + \frac{1}{17!} + \frac{1}{18!} + \frac{1}{19!} + \ldots$$

$$e = 1 + \frac{1}{1} + \frac{1}{2} + \frac{1}{6} + \frac{1}{24} + \frac{1}{120} + \frac{1}{720} + \frac{1}{5040} + \frac{1}{40320} + \frac{1}{362880} + \frac{1}{3628800} + \frac{1}{39916800} + \frac{1}{479001600} + \frac{1}{13!} + \frac{1}{14!} + \frac{1}{15!} + \frac{1}{16!} + \frac{1}{17!} + \frac{1}{18!} + \frac{1}{19!} + \ldots$$

Euler's continued fraction for e

$$e = 2 + \cfrac{1}{1 + \cfrac{1}{2 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{4 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{6 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{8 + \ldots}}}}}}}}}}}$$

2, 1, 2, 1, 1, 4, 1, 1, 6, 1, 1, 8, ...

$$e = \lim_{n \to \infty} (1 + \frac{1}{n})^n$$

$$e^{ix} = \cos(x) + i\sin(x)$$

$$(\cos(x) + i\sin(x))^n = \cos(nx) + i\sin(nx) = cis(nx)$$

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