Contents

Proof that euler's number is not a rational number

- $$e = \frac{m}{n}$$
- $$\frac{m}{n} = 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + ... + \frac{1}{n!} + \frac{1}{(n+1)!} + ...$$
- Multiply both sides by $n!$
- $$m(n-1)! = n! + n! + \frac{n!}{2!} + \frac{n!}{3!} + ... + 1 + \frac{1}{n+1} + \frac{1}{(n+1)(n+2)} + ...$$
- $$= \text{an integer} + \frac{1}{n+1} + \frac{1}{(n+1)(n+2)}$$
- Incapability of equality of an integer with an integer and a fraction