
Assignment 01

Compute the square root of π approximately.

Which one is bigger e^π or π^e ?

Compute the cubic root of 26 approximately.

What is the volume and the surface area of Earth (the radius of Earth is 6378.1 km)?

Compute the sine of 45° .

What is a Fibonacci number (check online)? What is the 9th Fibonacci number?
[hint: use help to find how to obtain a Fibonacci number in *Mathematica*]

Compute the sum of the reciprocals of the odd numbers from 1 to 31.
Give the exact and the approximate answer.

Compute the infinite sum:

$$\frac{1}{1} + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \dots$$

Compute approximately $(S1+S2)/P1$, where
S1 is the sum of the first 10 prime numbers;
S2 is the sum of the first 20 numbers which are multiples of 10;
P1 is the product of the square root of the first 10 even numbers;

Where have you encountered the binomial coefficient

$$C(n,k) = \frac{n!}{k!(n-k)!} ?$$

(i) Use its definition to compute $C(10,4)$.

(ii) The binomial coefficient can also be expressed as

$$\binom{n}{k} = \binom{n-1}{k-1} \binom{n-2}{k-2} \cdots \binom{n-k+1}{1}$$

Use this representation to compute $C(10,4)$ [hint: use "Product"]