Practical 11 : Trapezoidal Rule

Find the value of the definite Integral .

Q1 : $\int_1^2 \frac{1}{x}\, dx$

In[5]:=
```
f[x_] := 1/x; a = 1; b = 2;
n = 10;
h = (b - a)/n;
value = h/2 * (f[a] + 2 * Sum[f[a + i * h], {i, 1, n - 1}] + f[b]);
Print["Value Evaluated = ", N[value]]
```

```
Value Evaluated = 0.693771
```

Q2 : $\int_0^1 e^{-x}\, dx$

In[14]:=
```
f[x_] := Exp[-x]; a = 0; b = 1;
n = 10;
h = (b - a)/n;
value = h/2 * (f[a] + 2 * Sum[f[a + i * h], {i, 1, n - 1}] + f[b]);
Print["Value Evaluated = ", N[value]]
```

```
Value Evaluated = 0.632647
```

Q3 : $\int_0^1 \frac{1}{1 + x^2}\, dx$

In[26]:=
```
f[x_] := 1/(1 + x^2); a = 0; b = 1;
n = 20;
h = (b - a)/n;
value = h/2 * (f[a] + 2 * Sum[f[a + i * h], {i, 1, n - 1}] + f[b]);
Print["Value Evaluated = ", N[value]]
```

```
Value Evaluated = 0.785294
```