

```

In[1]:= FindC[start_, end_, seq_] := (
    nn = Length[seq];
    count = 0;
    For[j = 1, j ≤ nn, j++,
        If[seq[[j]] ≥ start && seq[[j]] < end, count++];
        If[seq[[j]] ≥ end, Break[]];
    ];
    Return[count];
);

x = {3.22, 2.58, 3.03, 2, 2.53, 2.61, 1.87, 4.41, 4.48, 3.10,
    4.99, 1.82, 3.3, 2.93, 1.16, 4.12, 2.1, 2.47, 4.16, 2.14,
    2.89, 1.94, 3.29, 2.98, 3.75, 2.51, 3.17, 4.43, 2.83, 3.56,
    4.36, 1.64, 2.74, 4.13, 5.13, 2.44, 2.51, 3.97, 2.86, 2.96,
    2.99, 2.77, 2.43, 2.24, 4.34, 3.05, 2.53, 2.25, 3.64, 3.45};
x = Sort[x];
Print["sort ", x];
n = Length[x];
Print["n=", n];

$$\Delta t = \frac{x[[n]] - x[[1]]}{1 + \text{Log}[2, n]}$$

Print["Δt = ", Δt];
NN = Ceiling[(x[[n]] - x[[1]]) / Δt];
Print["N=", NN];
x[[n]]
first = Table[{}, {i, NN}, {j, 6}];
For[i = 1, i ≤ NN, i++,
    first[[i, 1]] = i;
    first[[i, 2]] = x[[1]] + (i - 1) * Δt;
    If[i ≠ NN, first[[i, 3]] = x[[1]] + i * Δt, first[[i, 3]] = x[[n]]];
    first[[i, 4]] =  $\frac{\text{first}[[i, 2]] + \text{first}[[i, 3]]}{2}$ ;
    first[[i, 5]] = FindC[first[[i, 2]], first[[i, 3]], x];
    If[i == NN, first[[i, 5]] ++];
    first[[i, 6]] = first[[i, 5]] / n;
];
Print[TableForm[first, TableHeadings →
    {None, {"№", "Начало", "Конец", "Середина", "Частота", "Частость"}}]];

sort {1.16, 1.64, 1.82, 1.87, 1.94, 2, 2.1, 2.14, 2.24, 2.25, 2.43, 2.44,
    2.47, 2.51, 2.51, 2.53, 2.53, 2.58, 2.61, 2.74, 2.77, 2.83, 2.86, 2.89,
    2.93, 2.96, 2.98, 2.99, 3.03, 3.05, 3.1, 3.17, 3.22, 3.29, 3.3, 3.45, 3.56,
    3.64, 3.75, 3.97, 4.12, 4.13, 4.16, 4.34, 4.36, 4.41, 4.43, 4.48, 4.99, 5.13}

n=50

Δt = 0.597545

N=7

Out[11]= 5.13

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№	Начало	Конец	Середина	Частота	Частость
1	1.16	1.75754	1.45877	2	$\frac{1}{25}$
2	1.75754	2.35509	2.05632	8	$\frac{4}{25}$
3	2.35509	2.95263	2.65386	15	$\frac{3}{10}$
4	2.95263	3.55018	3.25141	11	$\frac{11}{50}$
5	3.55018	4.14772	3.84895	6	$\frac{3}{25}$
6	4.14772	4.74527	4.44649	6	$\frac{3}{25}$
7	4.74527	5.13	4.93763	2	$\frac{1}{25}$

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In[15]:= Np = NN - 2;
second = Table[{}, {i, Np}, {j, 6}];
second[[1, 1]] = 1;
second[[1, 2]] = x[[1]] ;
second[[1, 3]] = first[[2, 3]] ;
second[[1, 4]] =  $\frac{\text{second}[[1, 2]] + \text{second}[[1, 3]]}{2}$  ;
second[[1, 5]] = first[[1, 5]] + first[[2, 5]] ;
second[[1, 6]] = second[[1, 5]] / n;
For[i = 2, i ≤ Np - 1, i++,
  second[[i, 1]] = i;
  second[[i, 2]] = first[[i + 1, 2]] ;
  second[[i, 3]] = first[[i + 1, 3]] ;
  second[[i, 4]] = first[[i + 1, 4]] ;
  second[[i, 5]] = first[[i + 1, 5]] ;
  second[[i, 6]] = first[[i + 1, 6]] ;
];

second[[Np, 1]] = Np;
second[[Np, 2]] = first[[NN - 1, 2]] ;
second[[Np, 3]] = first[[NN, 3]] ;
second[[Np, 4]] =  $\frac{\text{second}[[Np, 2]] + \text{second}[[Np, 3]]}{2}$  ;
second[[Np, 5]] = first[[Np + 1, 5]] + first[[Np + 2, 5]] ;
second[[Np, 6]] = second[[Np, 5]] / n;
Print[TableForm[second, TableHeadings →
  {None, {"№", "Начало", "Конец", "Середина", "Частота", "Частость"}}]];

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№	Начало	Конец	Середина	Частота	Частость
1	1.16	2.35509	1.75754	10	$\frac{1}{5}$
2	2.35509	2.95263	2.65386	15	$\frac{3}{10}$
3	2.95263	3.55018	3.25141	11	$\frac{11}{50}$
4	3.55018	4.14772	3.84895	6	$\frac{3}{25}$
5	4.14772	5.13	4.63886	8	$\frac{4}{25}$

```

In[33]:= a = 0;

a = 
$$\frac{\sum_{i=1}^{Np} \text{second}[[i, 4]] * \text{second}[[i, 5]]}{n};$$


Print["a=", a];

a=3.06707

In[36]:= d = 
$$\frac{\sum_{i=1}^{Np} ((\text{second}[[i, 4]] - a)^2 * \text{second}[[i, 5]])}{n};$$


Print["d=", d];

d=0.870314

In[54]:= avg = 
$$\frac{\sum_{i=1}^n x[[i]]}{n};$$


Print["Выборочное среднее = ", avg];
Print["difference=", Abs[avg - a]];

Выборочное среднее = 3.056
difference=0.0110685

In[57]:= disp = 
$$\frac{\sum_{i=1}^n (x[[i]] - \text{avg})^2}{n};$$


Print["Выборочная дисперсия = ", disp];
Print["difference = ", Abs[disp - d]];

Выборочная дисперсия = 0.797108
difference = 0.0732063

In[60]:= Clear[result, gist];
gist[t_] := (
  result;
  For[j = 1, j ≤ Np, j++,
    If[t ≥ second[[j, 2]] && t < second[[j, 3]],
      result = second[[j, 6]] / (second[[j, 3]] - second[[j, 2]]);
    Return[result]];
  ];
  If[t == second[[Np, 3]], result = second[[Np, 6]]];
  Return[result];
);

In[62]:= list = {};
For[i = 1, i ≤ Np, i++,
  AppendTo[list,
    {second[[i, 4]], second[[i, 6]] / (second[[i, 3]] - second[[i, 2]])}];
];

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In[64]:= Show[Plot[{ $\frac{1}{\text{Sqrt}[2 \pi d]} e^{-\frac{(t-a)^2}{2 d}}$ , gist[t]}, {t, 1.16, 5.13}], ListLinePlot[list]]
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