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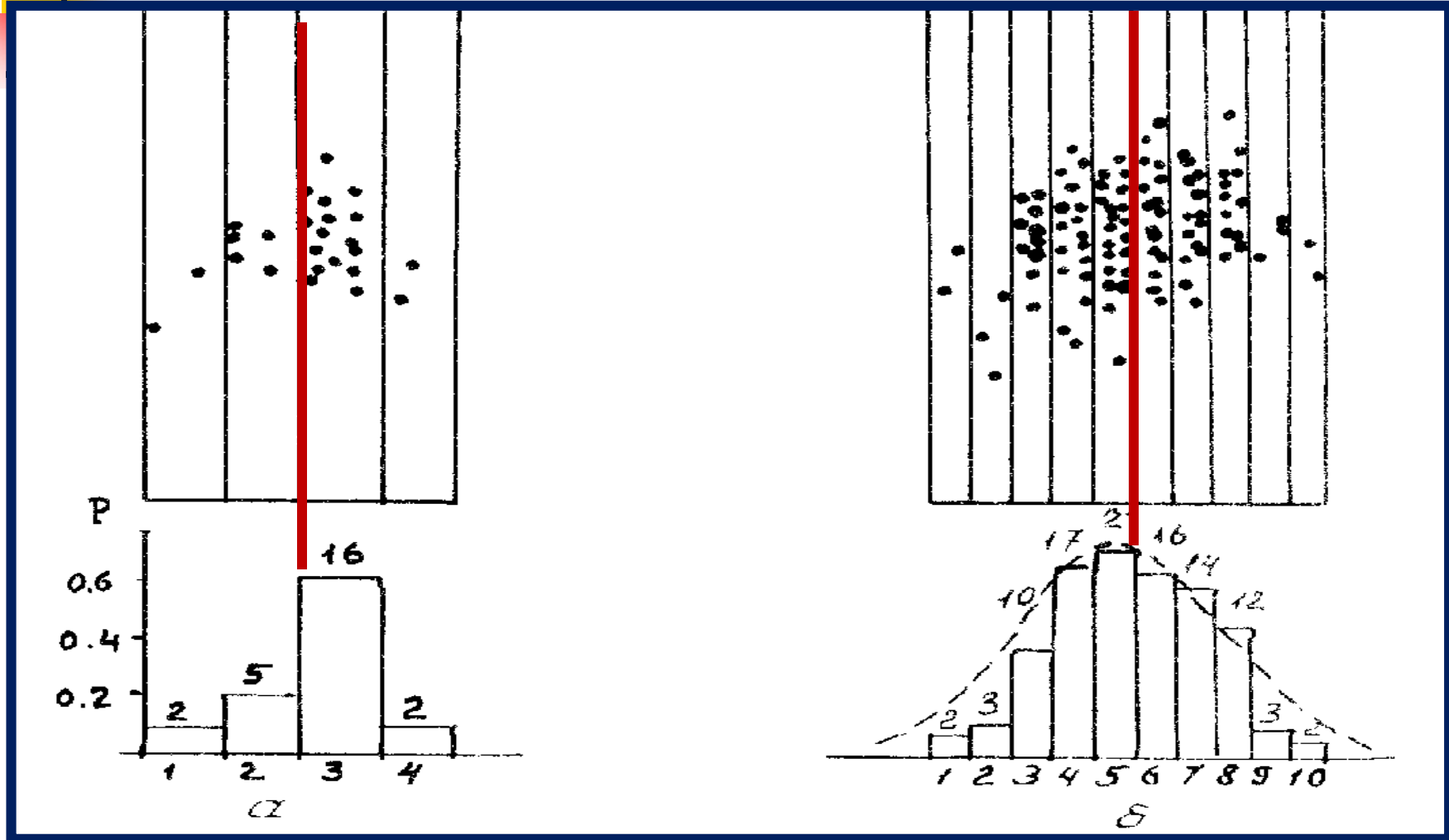
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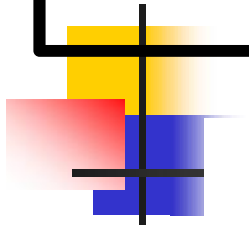
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(histos –)



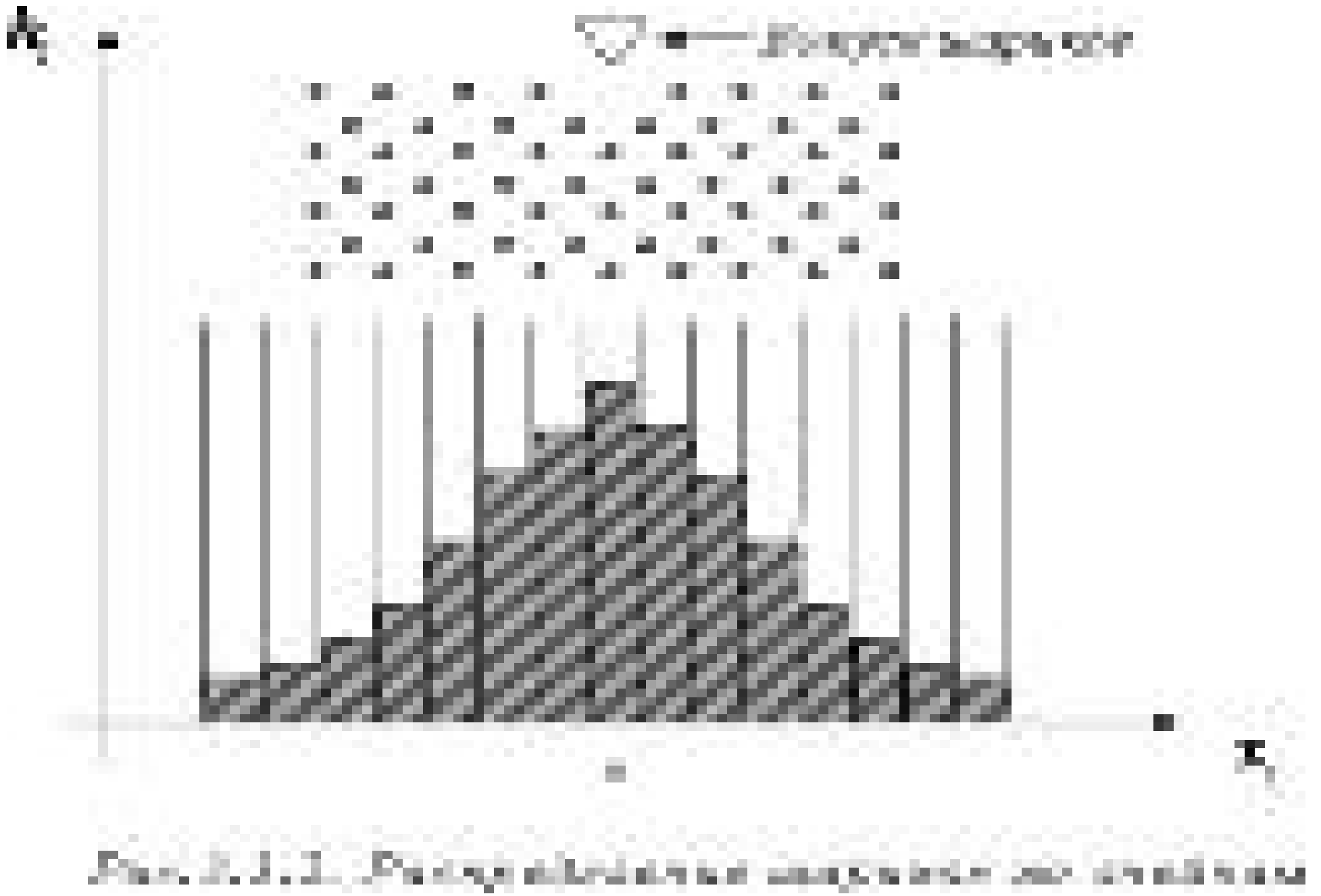
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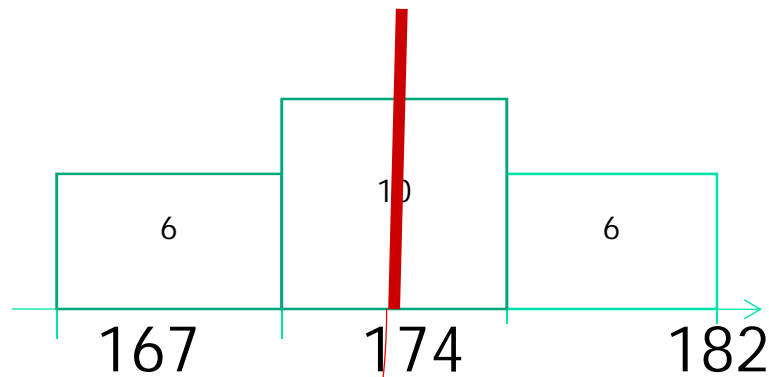
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189

N = 22

181 165
 178 183
 167 187
 186 184
 180 175
 181 175
 173 181
 170 169
 183 177
 179 170
 172

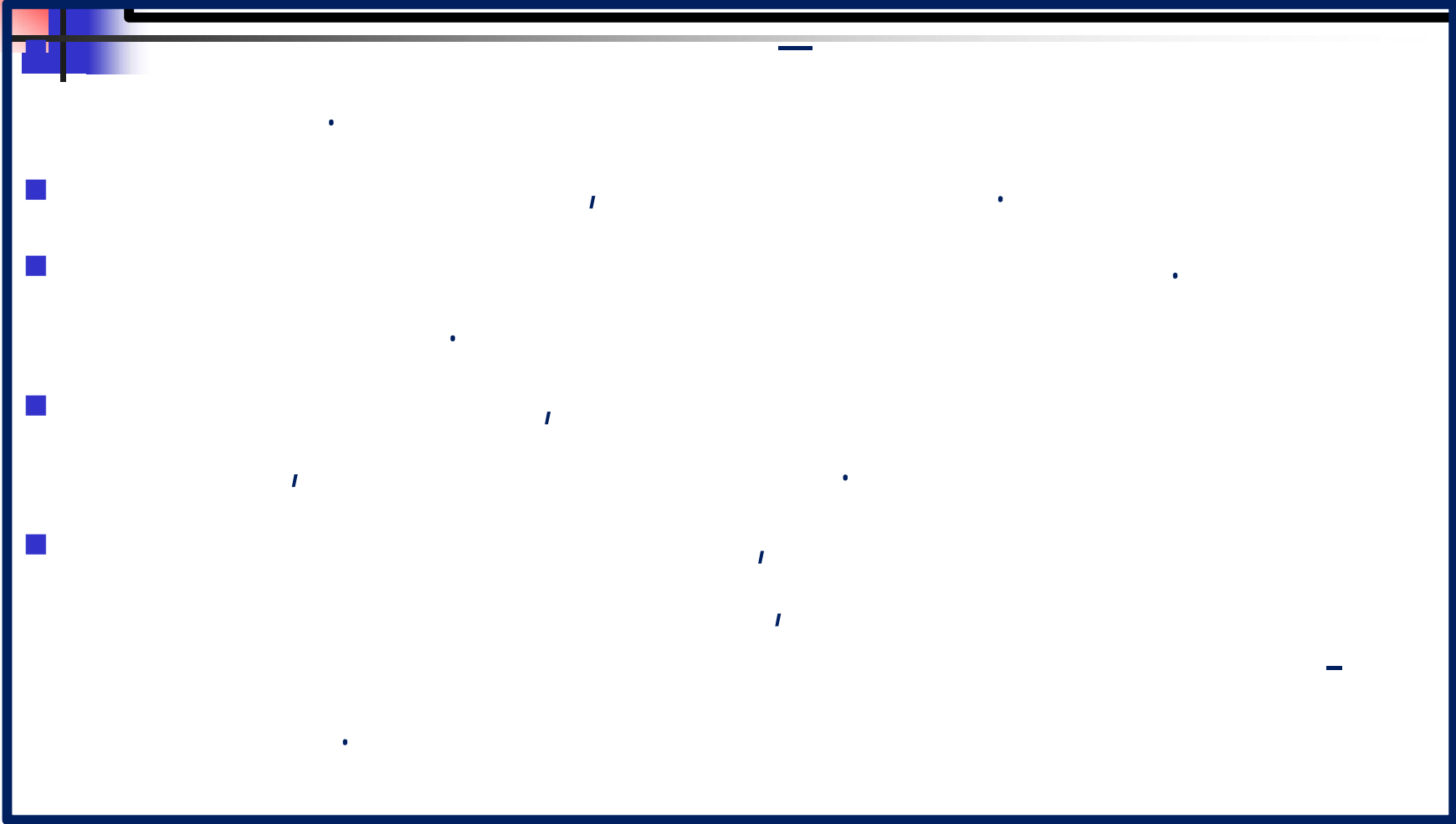


$$P_i = \frac{m_i}{n}$$

$$f(x) = \frac{m_i}{n\Delta x}$$

= 178.8



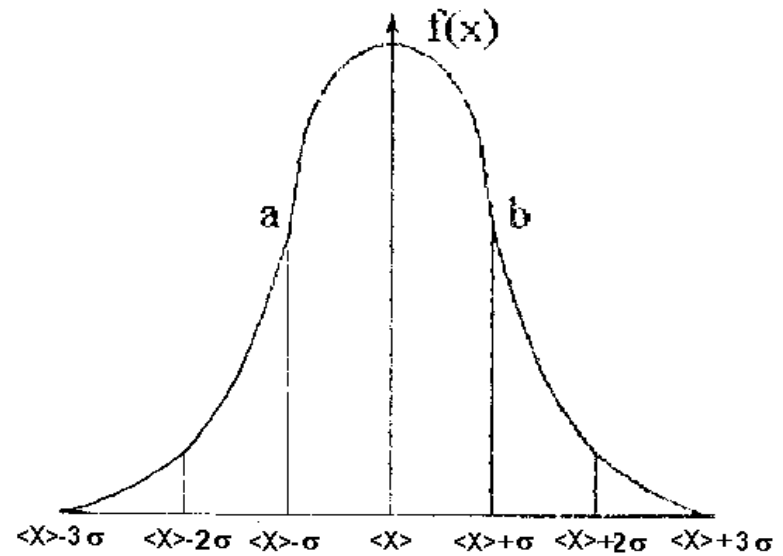


(1777 – 1855)



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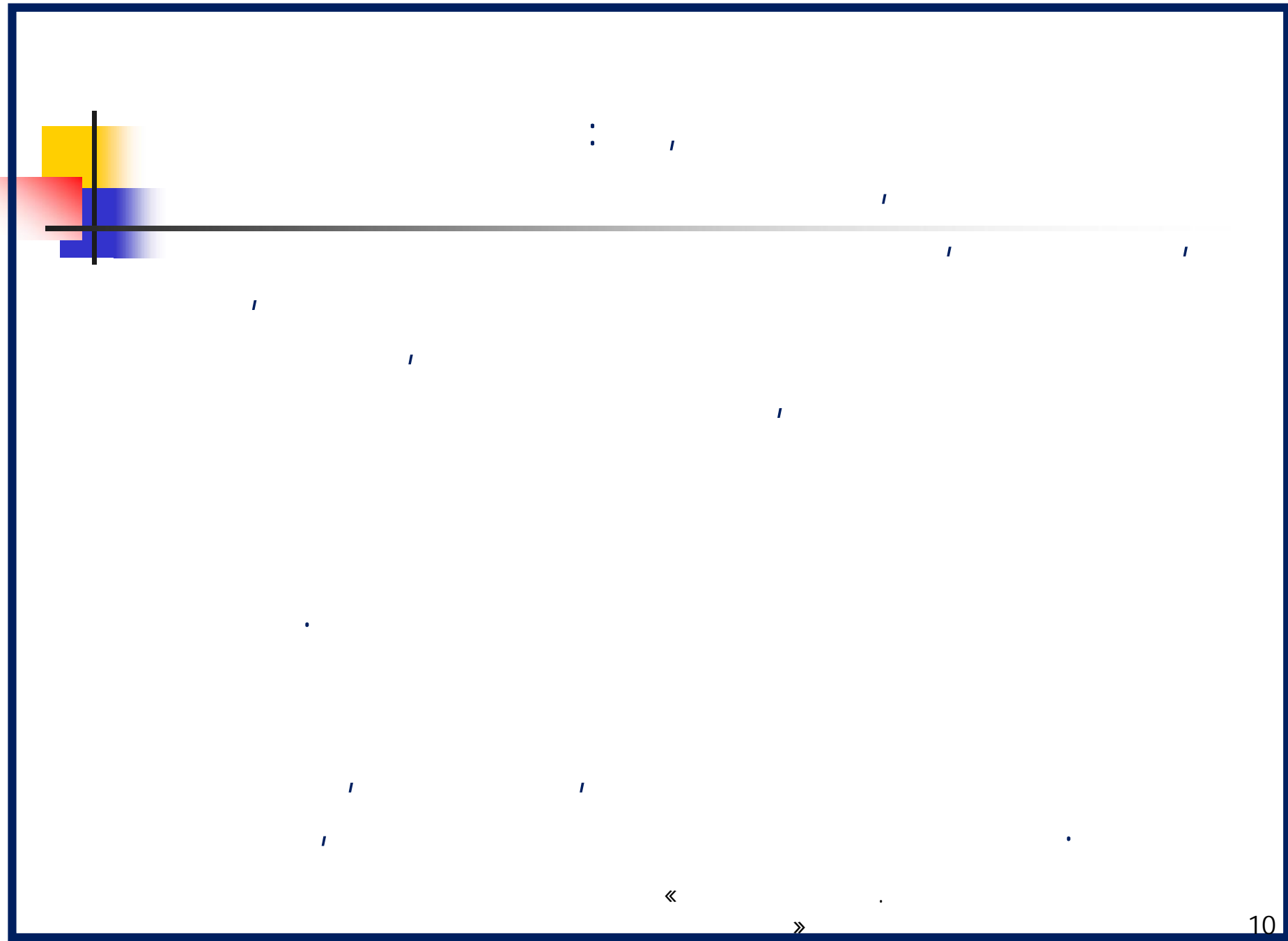
(, 1821)

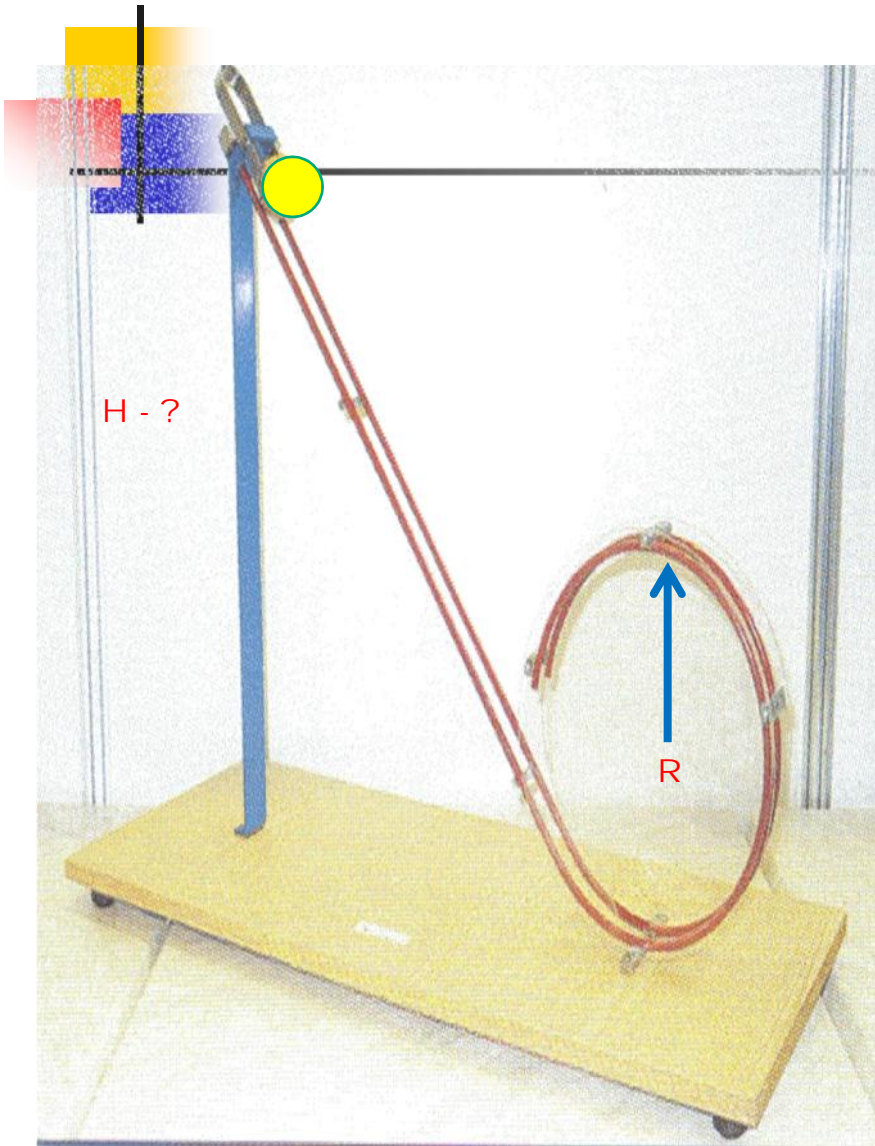


$$f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{(x-\langle x \rangle)^2}{2\sigma^2}}$$

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4.80

n = 10

4.95

5.00

4.86

5.06

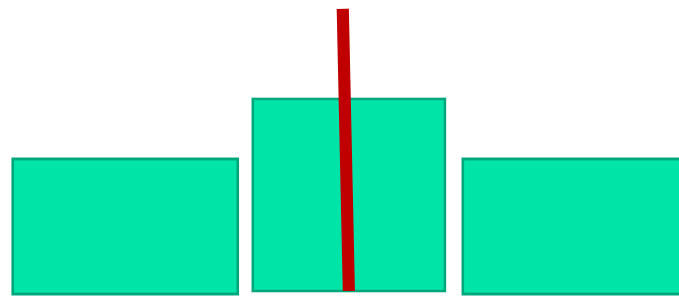
4.88

5.09

5.19

5.03

4.94



4.80

4.93

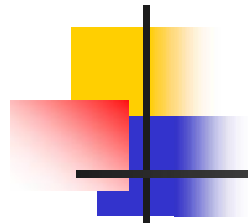
5.06

5.19

< t > = 4.98

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2.



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3.

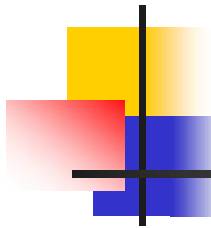
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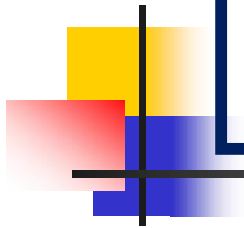
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$$\Delta_1 = x_0 - x_1$$

$$\Delta_2 = x_0 - x_2$$

.....

$$\Delta_n = x_0 - x_n$$

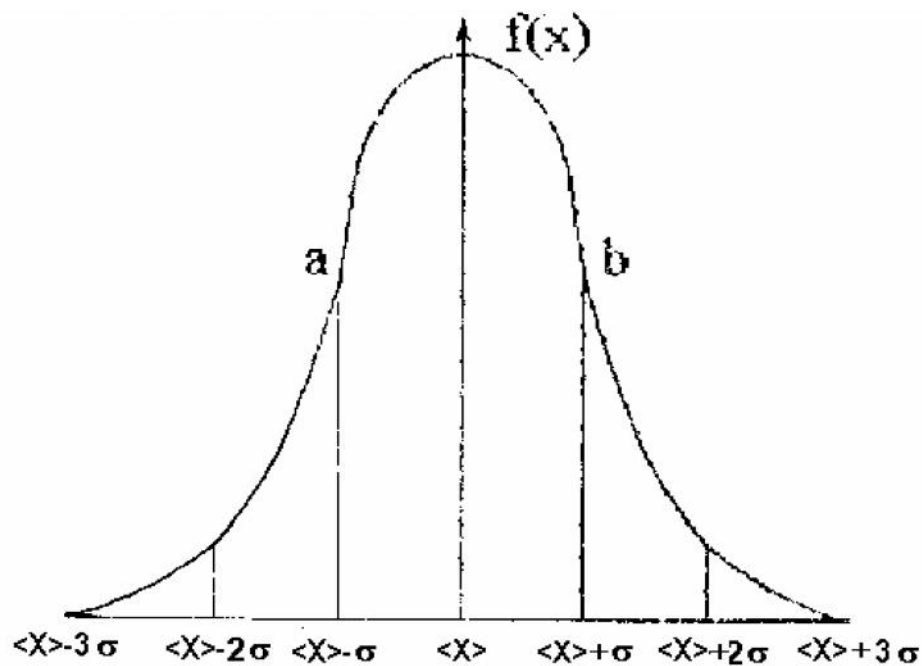
$$\frac{x_1 + x_2 + \dots + x_n}{n} = \langle x \rangle$$

$$\frac{\sum_{i=1}^n \Delta_i}{n} = \frac{nx_0}{n} - \frac{\sum_{i=1}^n x_i}{n}$$

$$x_0 - \langle x \rangle = \frac{\sum_{i=1}^n x_i}{n}$$

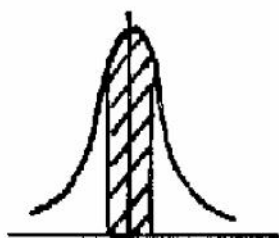
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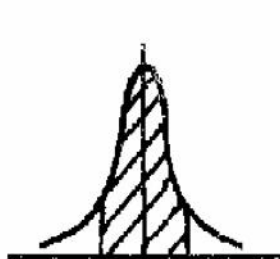


$$n \rightarrow \infty$$

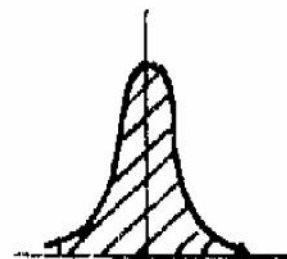
$$\Delta x \rightarrow 0$$



α

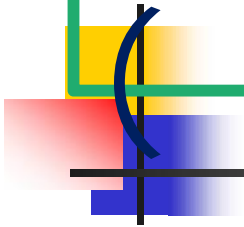


δ



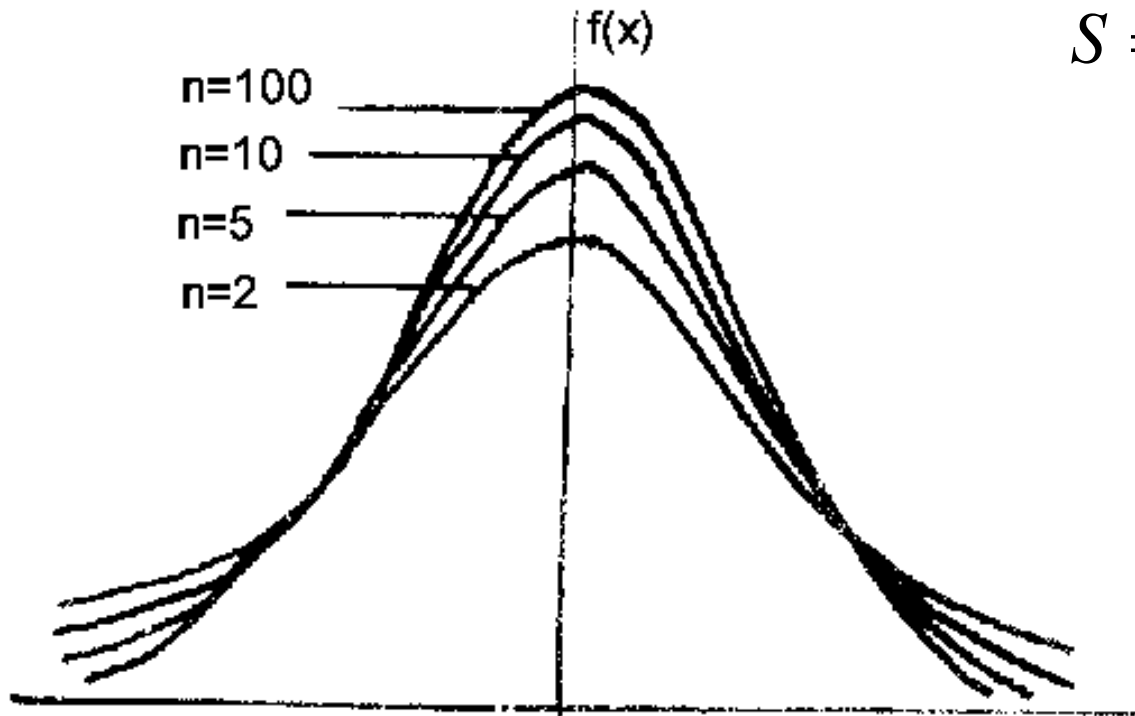
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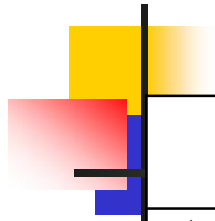


$$S = \sqrt{\frac{\sum_{i=1}^n (\langle x \rangle - x_i)^2}{n(n-1)}}$$

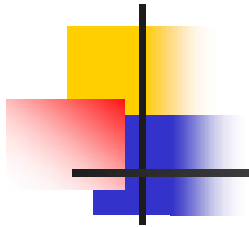
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(= 0,95)



	2	3	4	5	6	7	8	9	10	20	
(,n)	12,7	4,3	3,2	2,8	2,6	2,4	2,4	2,3	2,3	2,1	2



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$2l(2l < 2a)$.

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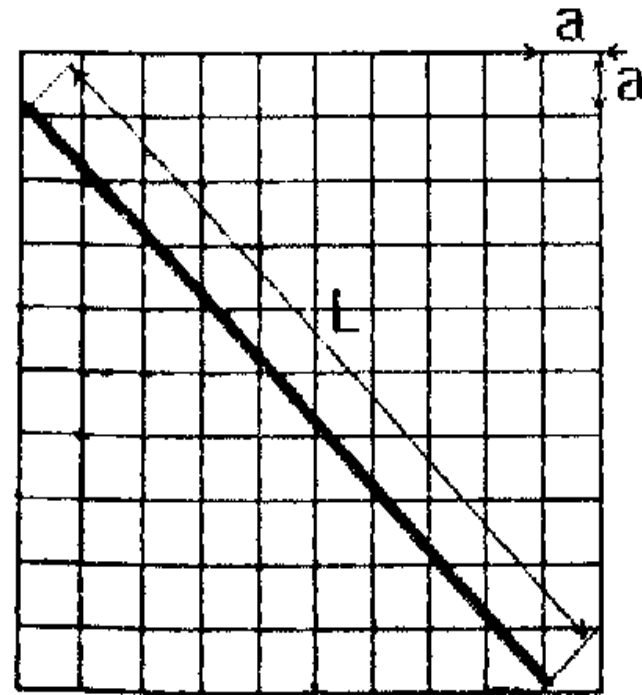
, $0 \frac{1}{2} \times \frac{1}{2} \mathbf{a}$,
 , $0 \frac{1}{2} \frac{1}{2} f / 2$.

, $\mathbf{x} \frac{1}{2} l \sin$,

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(G. Buffon 1777)



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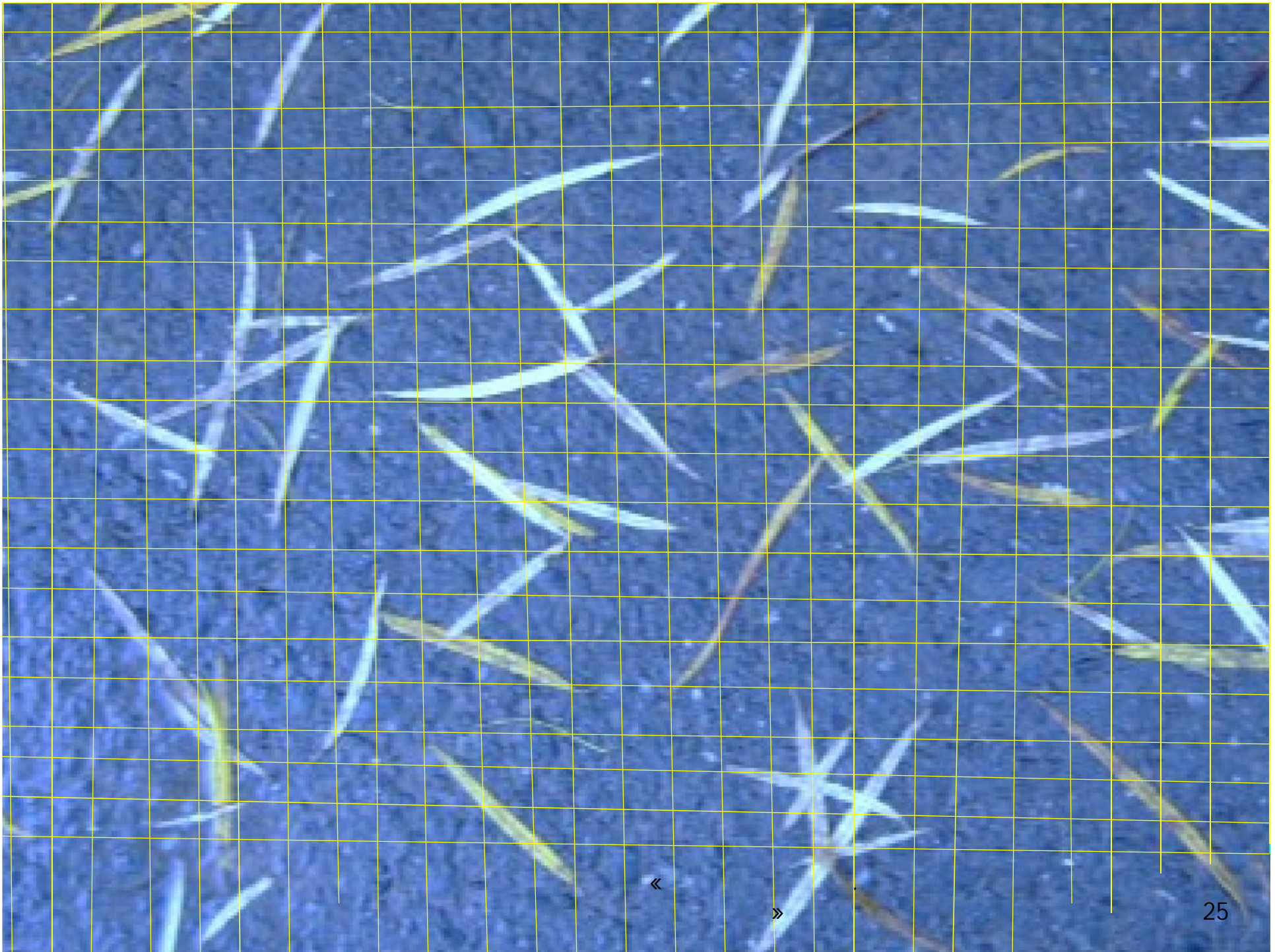
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$$f = \frac{4L}{m_i a}$$

/	m_i	i	$i^{-< >}$	$(i^{-< >})^2$
1				
2				
...				
10				

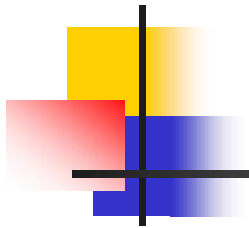
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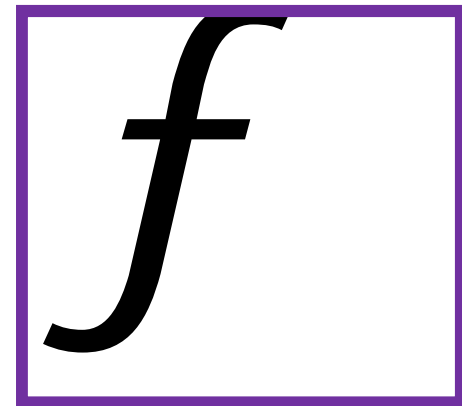
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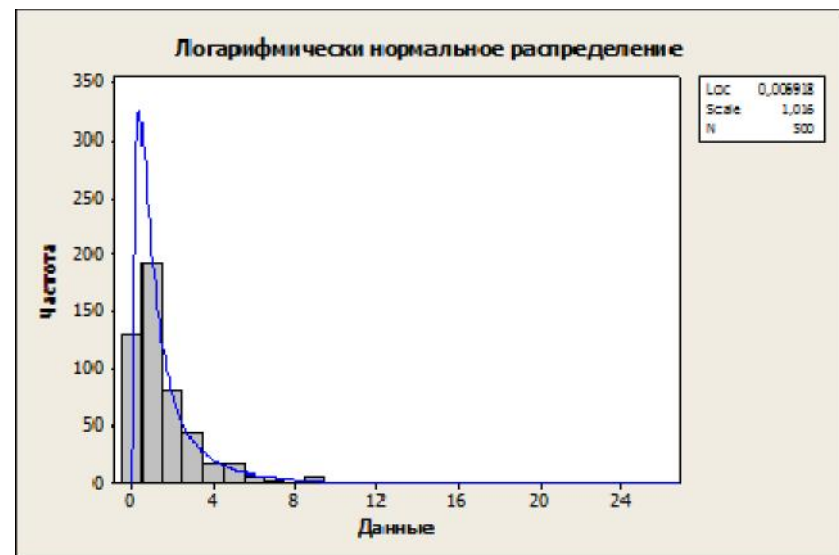
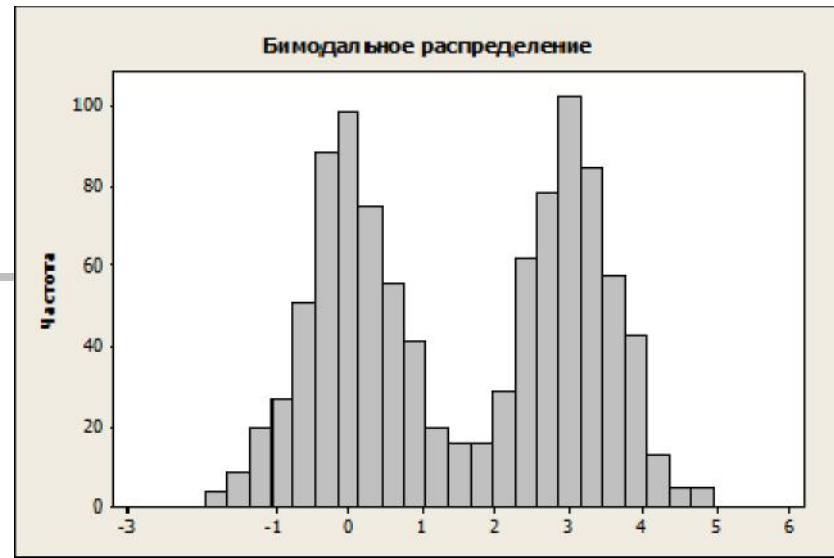
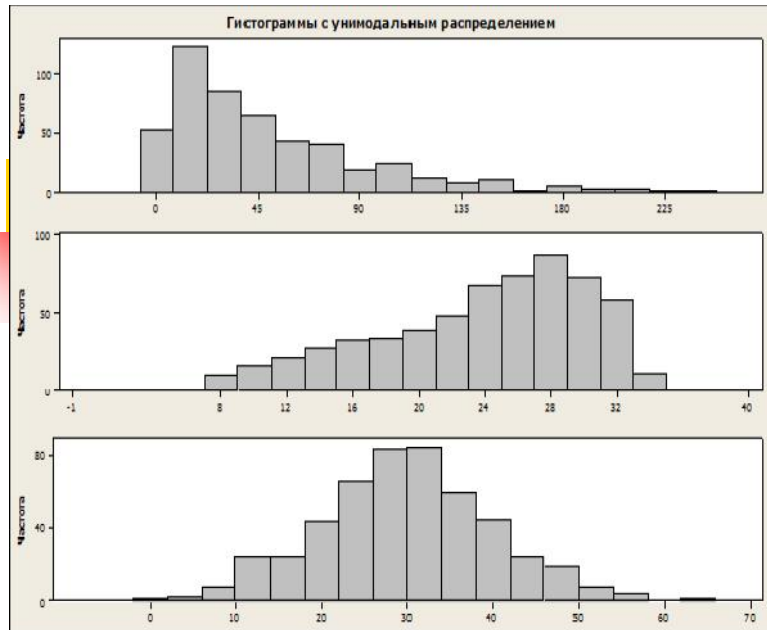
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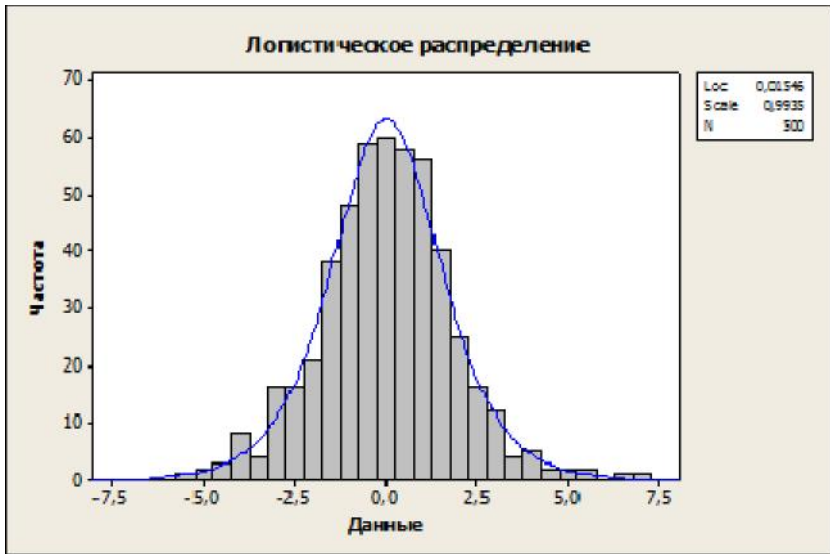
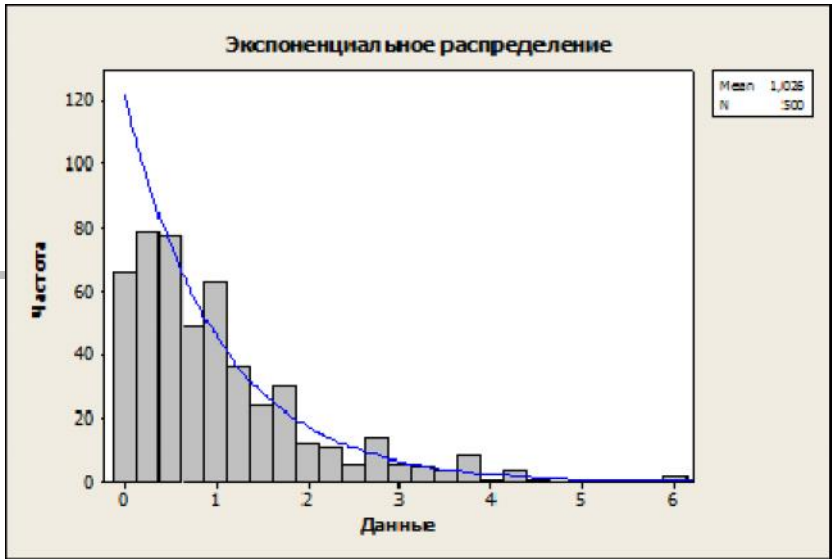
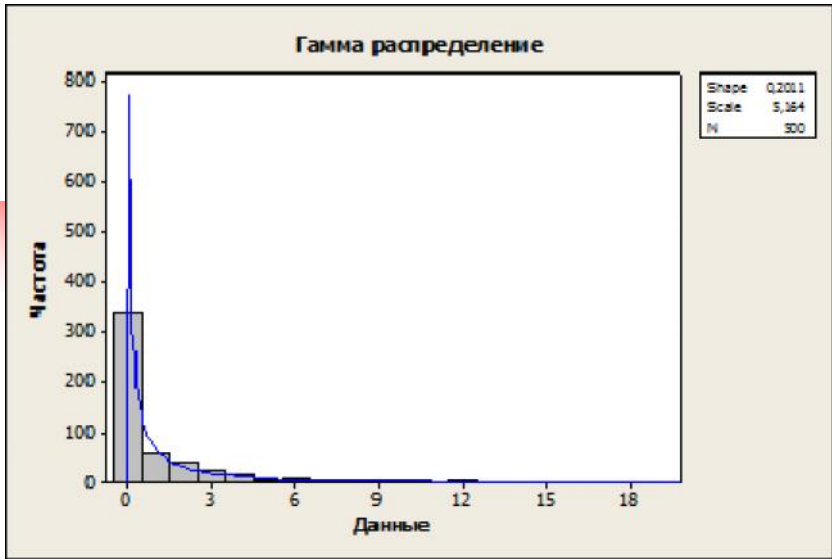
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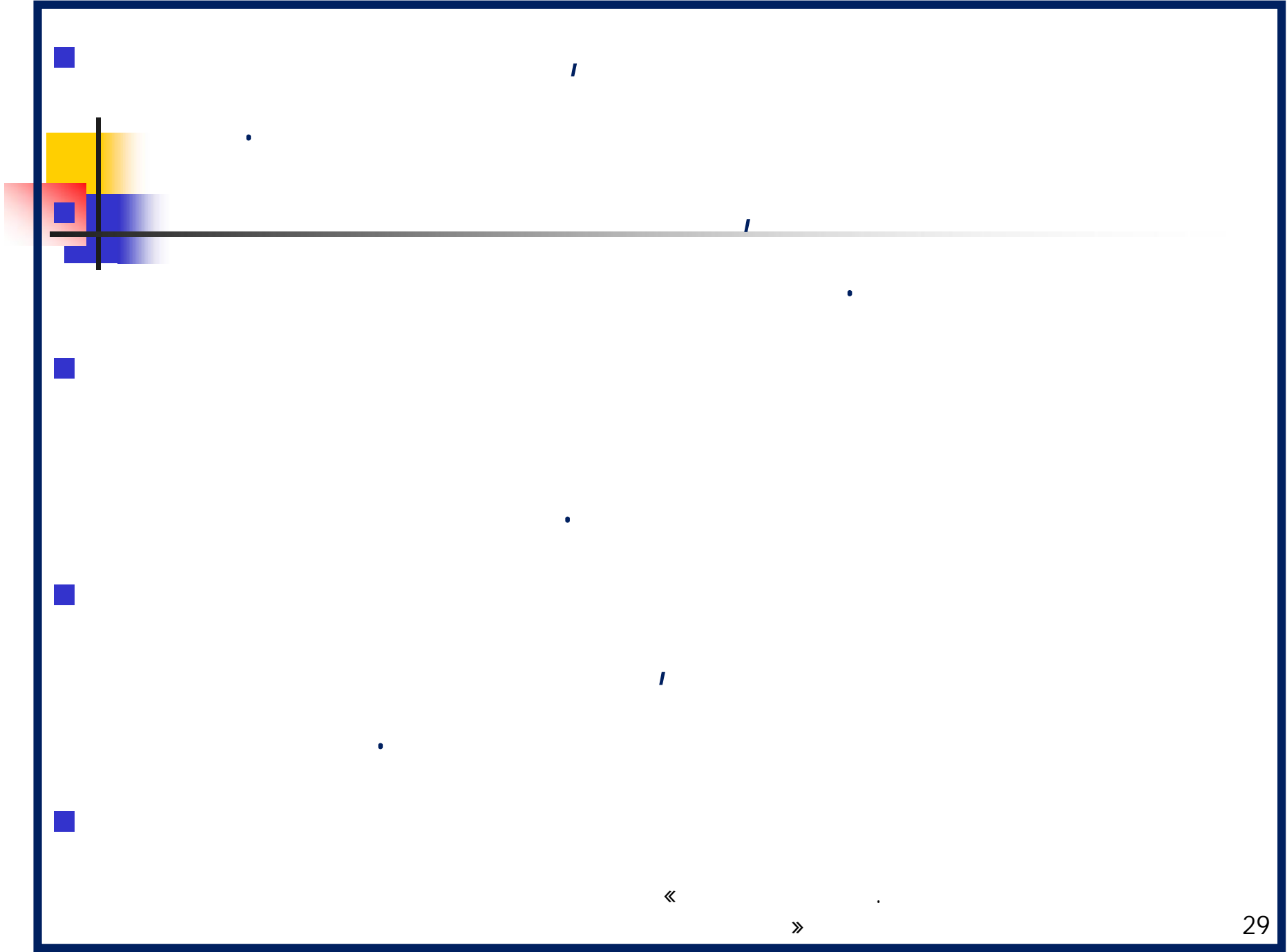
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