



Τῇ Κυριαῇ τοῦ Παραλύτου εἰς τοὺς Αἶonos Δόξα
 Ἕχος Π̣ Θ̣ Ν̣

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 Κωτάχ.
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Handwritten musical notation with notes and stems, including the word "Κατά" (Kata) above the staff.

Handwritten musical notation with notes and stems, including the letter "N" above the staff.

Handwritten musical notation with notes and stems, including the letter "N" above the staff.

Handwritten musical notation with notes and stems, including the letter "N" above the staff and the Greek letter delta (Δ) above the staff.

Handwritten musical notation with notes and stems, including the letter "N" above the staff and the Greek letter delta (Δ) above the staff.

Handwritten musical notation with notes and stems, including the word "Κατά" (Kata) above the staff and the Greek letter delta (Δ) above the staff.

Handwritten musical notation with notes and stems, including the letter "N" above the staff and the Greek letter alpha (α) below the staff.

Handwritten musical notation with notes and stems, including the Greek letter delta (Δ) above the staff.

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Handwritten text, possibly a signature or name: "Karl A. K..."

1938

Stupid
30/4/950

THEORY OF THE EARTH

CHAPTER I

THE EARTH AS A BODY

1. The Earth is a body of matter.

2. It is a body of matter.

3. It is a body of matter.

4. It is a body of matter.

5. It is a body of matter.

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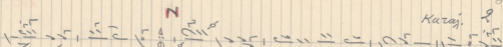
21. It is a body of matter.

22. It is a body of matter.

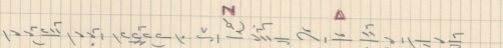
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24. It is a body of matter.

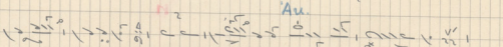
25. It is a body of matter.



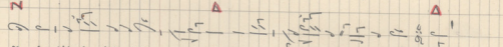
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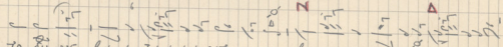
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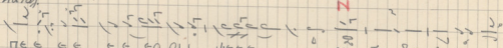
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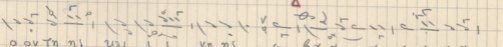
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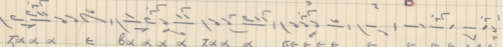
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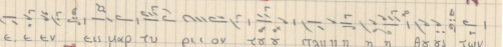
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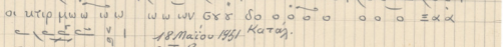
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18 Μαΐου 1961 Κατά
 Χ. Τ. Β.

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THEORY OF PARABOLAS

M. A. Kabanov

Let AB be a chord of a parabola $y = ax^2 + bx + c$ with vertex A and focus F . The line AF is perpendicular to AB . Find the ratio of the lengths of the segments AF and AB .

Solution. Let the vertex of the parabola be at the origin $O(0,0)$ and the focus $F(0, \frac{1}{4a})$. Let the chord AB be a line segment with endpoints $A(x_1, y_1)$ and $B(x_2, y_2)$ on the parabola. The condition $AF \perp AB$ implies that the slope of AF is the negative reciprocal of the slope of AB .

The slope of AF is $\frac{y_1 - \frac{1}{4a}}{x_1}$. The slope of AB is $\frac{y_2 - y_1}{x_2 - x_1}$. The condition $AF \perp AB$ gives the equation $(\frac{y_1 - \frac{1}{4a}}{x_1}) \cdot (\frac{y_2 - y_1}{x_2 - x_1}) = -1$.

Since A and B are on the parabola, we have $y_1 = ax_1^2 + bx_1 + c$ and $y_2 = ax_2^2 + bx_2 + c$. Substituting these into the perpendicularity condition and simplifying, we obtain a relationship between x_1 and x_2 .

After algebraic manipulation, it can be shown that the condition $AF \perp AB$ is satisfied if and only if the chord AB is perpendicular to the axis of symmetry of the parabola.

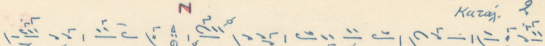
Let AB be a vertical chord. Then $A(x, y)$ and $B(x, -y)$ are points on the parabola. The focus F is at $(0, \frac{1}{4a})$. The condition $AF \perp AB$ is satisfied for any such chord.

Let AB be a horizontal chord. Then $A(x_1, y)$ and $B(x_2, y)$ are points on the parabola. The condition $AF \perp AB$ is not satisfied for any such chord.

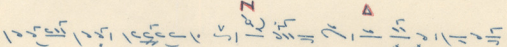
Therefore, the only chords AB for which $AF \perp AB$ are the vertical chords. For these chords, the length of AF is $\frac{1}{4a}$ and the length of AB is $2y$.

The ratio of the lengths of the segments AF and AB is $\frac{1}{4ay}$.

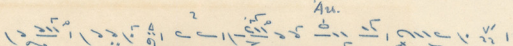
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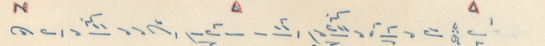
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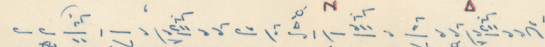
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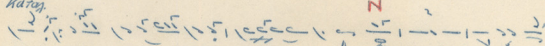
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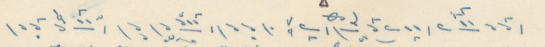
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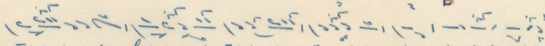
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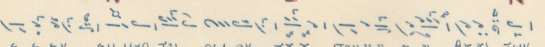
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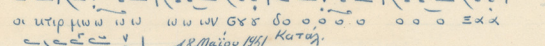
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18 Μαΐου 1951 Κατάξ.
 Α. Τ. Β.

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