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Αυ.

ο ου τε ε ε ρ α η ε νε ε ε ρ γ ε ι α α

ε ε ε δ ε ι ε ι ε ι ε ι χ θ η υ γ ε ο δ υ ο β α α ζ α α α α υ ο ν

β α α α α α ρ ο σ α η ε ε ε ε ε ε ε ρ ρ ι

υ ε ε ε υ γ ε ο ρ ε ι ο ν τ η η σ υ χ ι

η η η ε β α α α α α α α ζ α ε ε ε ε ν ε υ μ α ρ

τ ο ρ ι ο ν τ ο σ η η η θ ο ο ι τ ω ν ο υ π ι ρ ω ω ω

ω ω ω ν σ α σ δ ο ο ο ο ο ο ο ε ξ α γ ο ι ο ι ο ι

24/4/50
 K.M. N.A.K.
 18/5/1951

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THEORY OF PARABOLAS

Let the parabola be $y^2 = 4ax$. Let $P(x_1, y_1)$ be a point on the parabola. Then $y_1^2 = 4ax_1$.

Let $Q(x_2, y_2)$ be another point on the parabola. Then $y_2^2 = 4ax_2$. The chord PQ is a focal chord if and only if $\frac{y_1}{y_2} = -\frac{x_1}{x_2}$.

Let us suppose that PQ is a focal chord. Then $\frac{y_1}{y_2} = -\frac{x_1}{x_2}$. Squaring both sides, we get $\frac{y_1^2}{y_2^2} = \frac{x_1^2}{x_2^2}$. Using $y_1^2 = 4ax_1$ and $y_2^2 = 4ax_2$, we get $\frac{4ax_1}{4ax_2} = \frac{x_1^2}{x_2^2}$.

Therefore, $\frac{x_1}{x_2} = \frac{x_1^2}{x_2^2}$, which implies $x_1 = x_2$. This is not possible for a focal chord. Hence, PQ is not a focal chord.

Let us suppose that PQ is not a focal chord. Then $\frac{y_1}{y_2} \neq -\frac{x_1}{x_2}$. Squaring both sides, we get $\frac{y_1^2}{y_2^2} \neq \frac{x_1^2}{x_2^2}$.

Using $y_1^2 = 4ax_1$ and $y_2^2 = 4ax_2$, we get $\frac{4ax_1}{4ax_2} \neq \frac{x_1^2}{x_2^2}$. Therefore, $\frac{x_1}{x_2} \neq \frac{x_1^2}{x_2^2}$.

Thus, $x_1 \neq x_2$. This is possible for a non-focal chord. Hence, PQ is not a focal chord.

Therefore, PQ is not a focal chord. This completes the proof.

Let us suppose that PQ is a focal chord. Then $\frac{y_1}{y_2} = -\frac{x_1}{x_2}$. Squaring both sides, we get $\frac{y_1^2}{y_2^2} = \frac{x_1^2}{x_2^2}$.

... $\frac{1}{x} - \frac{1}{x^2} = \frac{x-1}{x^2}$...

... $\frac{1}{x^2} - \frac{1}{x^3} = \frac{x-1}{x^3}$...

... $\frac{1}{x^3} - \frac{1}{x^4} = \frac{x-1}{x^4}$...

... $\frac{1}{x^4} - \frac{1}{x^5} = \frac{x-1}{x^5}$...

... $\frac{1}{x^5} - \frac{1}{x^6} = \frac{x-1}{x^6}$...

... $\frac{1}{x^6} - \frac{1}{x^7} = \frac{x-1}{x^7}$...

... $\frac{1}{x^7} - \frac{1}{x^8} = \frac{x-1}{x^8}$...

...
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...

ΤΗ ΚΑΥΣΙΑΚΗ ΤΩ ΠΑΡΑΔΕΙΧΤΩ

ΕΙΣ ΤΑΥΤΑ ΑΝΩΣΤΩΣ ΔΕΔΕΙΧΜΕΝΟΝ

$$\frac{1}{\alpha} - \frac{1}{\beta} = \frac{\beta - \alpha}{\alpha\beta} \quad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta}$$

$$\frac{1}{\alpha} - \frac{1}{\beta} = \frac{\beta - \alpha}{\alpha\beta} \quad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta}$$

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$$\frac{1}{\alpha} - \frac{1}{\beta} = \frac{\beta - \alpha}{\alpha\beta} \quad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta}$$

Κατά.

Handwritten musical notation with notes and rests, including the word "Κατά" written above.

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1950

22/4/53

K. M. N. A. K.
Μουσικός Τ. Βλαχόπουλος

To I B^o εις τορδαμν Ευαγγελίου

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22/4/53

1953

N.T.B.

K.M.M.A.K.

Μουσική Σχολή

