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SYNOPSIS

This is the third of a four part series by *Crux* editor J. Chris Fisher. The goal of the series is to study Harmonic sets. This instalment introduces and examines the Harmonic mean.

This is the second of a three part series of articles investigating the centroid of vertices, centroid of perimeter and centroid of area for a plane noncrossed quadrangle. In this installment, the centroid of the perimeter is introduced. It is determined when the centroid of the perimeter coincides with the centroid of vertices and when it coincides with the centroid of area.

This month's "free sample" is:

3852. *Proposé par Václav Konečný, Big Rapids, MI, É-U.*

On donne les graphes de deux fonctions f et g, positives, continues et croissantes, satisfaisant à $0 < f(x) < g(x)$ pour tout $x \geq 0$. On considère le système d'équations

$$f(x_1) + f(x_2) = K$$
$$g(x_1) + g(x_2) = L.$$

Si $x_1 > 0$ et $K > 0$ sont donnés, trouver $x_2 > 0$ et $L > 0$ via la construction classique grecque (avec la règle et le compas) de sorte que le système d'équation soit satisfait.

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3852. *Proposed by Václav Konečný, Big Rapids, MI, USA.*

Given the graphs of two positive, continuous, increasing functions f, g, satisfying $0 < f(x) < g(x)$ for all $x \geq 0$. Consider the following system of equations

$$f(x_1) + f(x_2) = K$$
$$g(x_1) + g(x_2) = L.$$

If $x_1 > 0$ and $K > 0$ are given, find $x_2 > 0$ and $L > 0$ by the Classical Greek construction (compass and straightedge) such that the system of equations is satisfied.