

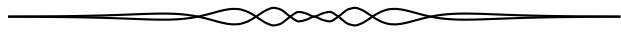
THE CONTEST CORNER

No. 41

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The problems featured in this section have appeared in, or have been inspired by, a mathematics contest question at either the high school or the undergraduate level. Readers are invited to submit solutions, comments and generalizations to any problem. Please see submission guidelines inside the back cover or online.

*To facilitate their consideration, solutions should be received by the editor by **December 1, 2016**, although late solutions will also be considered until a solution is published.*



CC201. An expedition to the planet Bizarro finds the following equation scrawled in the dust.

$$3x^2 - 25x + 66 = 0 \implies x = 4 \text{ or } x = 9.$$

What base is used for the number system on Bizarro?

CC202. The positive integers from 1 to n inclusive are written on a blackboard. After one number is erased, the average (arithmetic mean) of the remaining $n - 1$ numbers is $46\frac{20}{23}$. Determine n and the number that was erased.

CC203. Two circles, one of radius 1, the other of radius 2, intersect so that the larger circle passes through the centre of the smaller circle. Find the distance between the two points at which the circles intersect.

CC204. A 10 metre ladder rests against a vertical wall. The midpoint of the ladder is twice as far from the ground as it is from the wall. At what height on the wall does the ladder reach?

CC205. In the parallelogram $ABCD$, point X lies on AB such that XB is twice the length of AX . Let Y be the point of intersection of XC and BD . What fraction is the area of the triangle DCY of the area of the parallelogram $ABCD$?

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CC201. Une expédition à la planète Bizarro découvre l'énoncé suivant inscrit dans le sable.

$$3x^2 - 25x + 66 = 0 \implies x = 4 \text{ ou } x = 9.$$

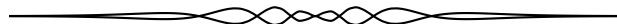
Quelle est la base du système de numération de la planète Bizarro?

CC202. On écrit au tableau les entiers positifs de 1 à n . Un des nombres est effacé. La moyenne des $n - 1$ nombres qui restent est $46\frac{20}{23}$. Déterminer la valeur de n ainsi que le nombre effacé.

CC203. Trouver la distance entre les deux points d'intersection de deux cercles, de rayon 1 et 2 respectivement, qui se coupent de sorte le plus grand passe par le centre du plus petit.

CC204. Une échelle longue de dix mètres est placée contre un mur vertical. Si le milieu de l'échelle est deux fois plus distant du sol que du mur, à quelle hauteur l'échelle s'appuie-t-elle contre le mur?

CC205. Dans le parallélogramme $ABCD$, soit X le point du segment AB tel que XB est deux fois plus long que AX . Soit Y le point d'intersection de XC et BD . Trouver le rapport de l'aire du triangle DCY à celle du parallélogramme $ABCD$.



Math Quotes

Unfortunately what is little recognized is that the most worthwhile scientific books are those in which the author clearly indicates what he does not know; for an author most hurts his readers by concealing difficulties.

Evariste Galois, in N. Rose (ed.) "Mathematical Maxims and Minims", Raleigh NC: Rome Press Inc., 1988.