Math Problems of the Month

Q1. Find the domain of the function

$$f(x) = \sqrt{1 - \sqrt{2 - \sqrt{3 - x}}}.$$

Q2. Find values of a, b and c so that the following function is continuous.

$$f(x) = \begin{cases} 6 - 3bx & \text{if } x \neq -2 \\ cx^2 - ax + 4 & \text{if } -2 < x \leq -1 \\ 6 - bx & \text{if } -1 < x \leq 1 \\ ax^2 + c & \text{if } x > 1 \end{cases}$$

Q3. Prove that a function f which is either increasing or decreasing on the closed interval $a \leq x \leq b$ is one-to-one on that interval.

Word of the Month

A mathematician does not guess, but he knows. He does not try to persuade, because he proves. He does not expect your trust, however he may ask you to pay attention.

Henri Poincáre

NOVEMBER