

# Problemath

21 November 2011

(deadline 16 December 14:00)

## Problemath 7

What are the real solutions of the equation:

$$x^3 + 1 = 2\sqrt[3]{2x-1}?$$

## Problemath 8

For which value of  $n \geq 3$  is there, in the Euclidean space  $\mathbb{R}^3$ , a closed polygonal line of  $n$  sides, each of length 1, with two adjacent sides being always perpendicular?

## Problemath 9

For which prime numbers  $p$  and  $q$  is the number  $p^q + q^p$  also a prime number?