

PROBLEM 1: STARTING OFF ON A TANGENT
UNDERGRADUATE PROBLEM SOLVING CONTEST
Due Friday, October 23, 2009 by 5:00 PM

Let a_1, a_2, \dots, a_7 be real numbers. Show that there must be two of them, say x and y , for which

$$\left| \frac{x - y}{1 + xy} \right| < \frac{\sqrt{3}}{3}.$$

In the spirit of the UPSC, you should not search the internet or look the solution up in a book.