Problem of the Week 3, Fall 2005

Additional questions.

1. Prove that the problem is still true if we replace six by five. That is prove that among any five irrational numbers there are always three of them x, y, z such that $x + y, x + z, y + z$ are all irrational.

2. Prove that the problem is false if we replace four by six. That is, find four irrational numbers so that no three of them satisfy that all their pairwise sums are irrational.

3. Investigate similar questions where instead of asking for three irrational number we ask for four or more such that (a) all their pairwise sums are irrational, (b) all the sums in a cycle are irrational.