

Problem 4 (due Monday, October 25)

a) Let x_1, \dots, x_n be real numbers. Prove that
$$\sum_{i=1}^n \sum_{j=1}^n \frac{\sin(x_i - x_j)}{x_i - x_j} \geq \sum_{i=1}^n \sum_{j=1}^n \frac{\sin(x_i + x_j)}{x_i + x_j}$$
 with the convention that $\frac{\sin x}{x} = 1$ when $x = 0$.

b) Compute $\int_0^1 \sin 2x \sin 5x \, dx$.

The problem was solved by Ashton Keith. Ashton's solution is similar to our solution. For details see the following link [Solution](#).

From:

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