

**ZULF RUMINATES ON MY UNDERGRADUATE FUNCTIONAL
ANALYSIS AND ANALYSIS EDUCATION WITH STANFORD
SPRING 2012 ANALYSIS PROBLEM 3**

ZULFIKAR MOINUDDIN AHMED

1. STANFORD ANALYSIS QUAL SPRING 2012 II.3

Let F be Fourier transform on Schwartz functions.

(a) Show that there is a compactly supported function ϕ on \mathbf{R} with $\phi \geq 0$ and $\phi(0) > 0$ and $F\phi(0) > 0$.

(b) For a compactly supported distribution u prove

$$|D^\alpha F u(\xi)| \leq C_\alpha (1 + |\xi|)^N$$

for all multi-indices $\alpha \in \mathbf{N}^n$.

2. RETURNING TO TRUSTY STEIN-WEISS FOURIER ANALYSIS ON EUCLIDEAN
SPACES

I don't think this problem is hard, but since I attended Princeton and took classes with the great Elias Stein, I would rather review the issues of Schwartz distributions before doing this problem.