Problem 4. Let \( \mu \) be a Radon measure on \( \mathbb{R}^n \). Assume that for \( a \in \text{spt} \mu = \Sigma \)

\[
1 \leq \limsup \frac{\mu(B(a,2r))}{\mu(B(a,r))} < \infty.
\]

1. Show that for \( \tau \geq 1 \) and \( a \in \Sigma \)

\[
1 \leq \limsup \frac{\mu(B(a,\tau r))}{\mu(B(a,r))} < \infty.
\]

2. Prove that if there exist \( \kappa > 1 \) and \( R > 0 \) such that for \( r \in (0,R) \) and all \( a \in \Sigma \)

\[
\frac{\mu(B(a,2r))}{\mu(B(a,r))} \leq \kappa
\]

then for all \( \nu \in Tan(\mu,a) \) such that

\[
\nu = \lim_{i \to \infty} (\mu(B(a,r_i)))^{-1} T_{a,r_i} # \mu
\]

\( x \in \text{spt} \nu \) if and only if there exists a sequence \( x_i \in T_{a,r_i}(\Sigma) \) such that \( x_i \to x \).