Homework due Thursday, February 14:

10. Show that, for $\delta > 0$, $\mathcal{H}_\delta^1$ is an outer measure on $\mathbf{R}^2$, but the upper half plane $\{(x, y) \; : \; y > 0\}$ is not $\mathcal{H}_\delta^1$ measurable.

11. Show that for all $k \in [1, n]$, $\mathcal{H}^k$ is a metric outer measure on $\mathbf{R}^n$.

12. Show that, for $A \subset \mathbf{R}^n$, $\delta > 0$ and $k \in [1, n]$, $\mathcal{H}^k(A) = 0$ if and only if $\mathcal{H}_\delta^k(A) = 0$.