

GMT Seminar 4th December.

Question 1: (*Courtesy of Andreas Minne.*) Is assumed that $g \geq 0$ necessary for (8.5):

$$\int_{\mathbb{R}^n} \left[\int_{f^{-1}(y)} g(x) d\mathcal{H}^0(x) \right] d\mathcal{H}^n(y) = \int_M (Jf(x))g(x) d\mathcal{H}^n(x)?$$

Question 2: (*Courtesy of Andreas Minne.*) What happens if we exchange J^*f with Jf and vice versa in the area and coarea formulas.

Question 3: What is the geometric meaning of the area and co-area formula?

Question 4: What is the geometric meaning of the mean curvature vector?

Question 5: What does it mean for a manifold to be stationary?

Question 6: Can one easily see, say for one dimensional manifolds M , that M is stationary if $\underline{H} = 0$?

Question 7: What is the geometric picture for Theorem 10.4 on p. 56 (Sard's Theorem) when $M \subset \mathbb{R}^2$ and $N = 1$? (The picture you would draw to explain Sard's Theorem to an undergraduate student.)