Problem 1. State the **Intermediate Value Theorem**.

Problem 2. State the **Mean Value Theorem**

Problem 3. Suppose that $f(x)$ is infinitely differentiable at $a$. Give the Taylor expansion for $f$ at $a$.

$$f(a + h) = \text{______________________________}$$

Problem 4. Suppose that $h : \mathbb{R}^n \to \mathbb{R}^n$ is continuous. Suppose that

$$\lim_{n \to \infty} x_n = z$$

What is

$$\lim_{n \to \infty} h(x_n) = ?$$