

MAD 4401 SPRING 2020 QUIZ 1 JAMES KEESLING

NAME \_\_\_\_\_

Write answers on a printed copy of this page. Answer the following questions completely and correctly. Each problem is worth one point. Due in class on Wednesday, 20 January 2020.

**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  $a$ .

$f(a+h) =$  \_\_\_\_\_

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

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

What is

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