Problem Set 6   **Real Analysis 1**   **Due 10/23/20**

Four of these problems will be graded, with each problem worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor.

Prove or give a counterexample:

1. If a function f is bounded and continuous on D, then f is uniformly continuous on D.

2. If a function f is continuous at a real number $x = a$, then $[f(x)]^2$ is also continuous at $x = a$.

3. The set $\{1, 2, 3\}$ is closed.

4. A composition of two continuous functions is continuous