

# MTH 320: HW 1

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Due: January 16, 2019

Problems from Abbott's book (2nd ed.) are labeled by **Abbott chpt.sec.#**.

1. (Abbott 1.2.1(b))
2. (Abbott 1.2.4)
3. (Abbott 1.2.6 (a)(d))
4. (Abbott 1.2.8)
5. (Abbott 1.2.12)
6. Given a function  $f : A \rightarrow B$  and a subset  $C \subset B$ . The *preimage* of  $C$  is defined as  $f^{-1}(C) = \{a \in A : f(a) \in C\}$ . Notice that  $f^{-1}(C) \subset A$ .
  - (a) Let  $X \subset A$ . Show that  $X \subset f^{-1}(f(X))$ .
  - (b) Let  $Y \subset B$ . How are  $f(f^{-1}(Y))$  and  $Y$  generally related?
7. (Abbott 1.3.3)
8. (Abbott 1.3.4)
9. (Abbott 1.3.6)
10. (Abbott 1.3.8)