

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)**