Quiz. Proof, Sections 1.1-1.3 Name _____

1. (1, 2 pts) Write out the pronunciation of these.
a) $x \in S \cup T$

b) $\{x \mid x^2 < 9\} \subset (-10, 10)$

2. (4 pts) a) Give the definition of *generalization*.

b) Give the definition of *conditional sentence*.

3. (4 pts) Are the two sentences equivalent? If not, give a **specific** counterexample.
a) $x = a$, $cx = ca$

b) $x \in S \cup T$, $x \in S$ and $x \in T$

4. (4 pts) Is the letter x a placeholder in the sentence? (Yes or No).
a) Let $f(x) = x^2$

b) $x - a = c$ iff $x = c + a$

c) $x - a = c$

d) $3(x + 7) = 3x + 21$

5. (4 pts) Which are open sentences?
a) $x^2 \geq 0$ b) $x \geq 0$ c) $x \geq 0$ iff $5x \geq 0$ d) $S \subset T$

6. (6 pts) Grammar. Most (not necessarily all) of these have grammatical mistakes or unconventional usages. Which ones, and what is grammatically wrong (be clear about exactly what is wrong)?
a) S or T b) $S \cup T \Rightarrow x \in S$ or $x \in T$ c) $x \in S \cap x \in T$

d) $3 \in [-2, \infty]$ e) $\{7\} \subset (-\infty, \infty)$ e) A or B