

Name: _____

Directions: Solve the following problems. Give supporting work/justification where appropriate.

1. [1 parts, 10 points each] Decide whether or not the following are statements. In the case of a statement, say if it is true or false, if possible. Briefly explain your reasoning.

(a) $0 \cdot 5 = \emptyset$

(b) An even integer plus an odd integer equals an odd integer.

(c) Always $\mathcal{P}(A)$ when A is a set.

(d) If a , b , and c are integers and $ab = ac$, then $b = c$.

(e) Every set is finite or infinite.

(f) $1 + \frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \cdots = \frac{3}{2}$.

(g) If x is an integer, then $x < 4$ or $x > 4$.

(h) $(\mathbb{Z} \cup \mathbb{N})$ or $(\mathbb{N} \cup \mathbb{Z})$

(i) $\mathbb{Z} \cup \mathbb{N} \subseteq \mathbb{Q}$

(j) If A and B are sets, then $|A| - |B| \geq |A - B|$.