Set Theory
Quiz 1

Name:_____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Write the axiom of pairing as a formal sentence.

$$(\forall a)(\forall b)(\exists p)(\forall c)((c \in p) \leftrightarrow (c = a) \vee (c = b))$$

2. Write the axiom of power set as a formal sentence. (You can use the symbol $\subseteq$ provided you give a formula $\varphi_{\subseteq}(x, y)$ defining "$x \subseteq y$".)

Let $\varphi_{\subseteq}(x, y)$ be the formula $\forall z((z \in x) \to (z \in y))$. The axiom of power set asserts

$$(\forall y)(\exists P)(\forall x)((x \in P) \leftrightarrow \varphi_{\subseteq}(x, y)).$$