Name: _____

Directions: Show all work. No credit for answers without work.

1. **[2 parts, 3 points each]** Orders in $\mathbb{Z}_{13}$.

   (a) Find the order of 2 in $\mathbb{Z}_{13}$. Is 2 a primitive root?

   (b) Find the order of 3 in $\mathbb{Z}_{13}$. Is 3 a primitive root?

2. **[4 points]** Use Fermat's Little Theorem and the fast power algorithm to compute the inverse of 17 in $\mathbb{F}_{37}$.