

Quiz 5

written by Alvin Wan . alvinwan.com/cs70

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This quiz does not count towards your grade. It exists to simply gauge your understanding. Treat this as though it were a portion of your midterm or final exam.

1 Modular Arithmetic

1. (True or False) The solution to $2x = 3 \pmod{7}$ is less than 2.
2. Solve the following system of equations.

$$\begin{aligned}x - y &= 5 \pmod{5} \\ -3x + 2y &= 6 \pmod{5}\end{aligned}$$

3. Prove that $\forall n \in \mathbb{N}, (n - 1) \mid -(n^2 + 3n + 2) \pmod{n}$. (i.e., $(n-1)$ divides $-(n^2 + 3n + 2)$).