KING SAUD UNIVERSITY

COLLEGE OF COMPUTER & INFORMATION SCIENCES
DEPT OF COMPUTER SCIENCE

CSC281 Discrete Mathematics
Practice for the Quiz 2
Instructor: Prof. Aqil Azmi

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1. Solve $3x \equiv 7 \bmod 16$.

2. Solve $4x^2 \equiv -1 \bmod 15$.

3. Find the last (i.e. the rightmost) two digits of $6^{100} \bmod 13$.

4. Solve using CRT (Chinese Remainder Theorem),
$3x \equiv 2 \bmod 5$
$2x \equiv 4 \bmod 7$
$x \equiv 3 \bmod 8$.

5. Calculate, $\phi(\phi(1000))$. Here, ϕ is the Euler's totient function.

6. For a prime integer *p*, $\phi(p) = p - 1$. What is $\phi(p^n)$.

7. Compute $\prod_{k=1}^{n} \phi(p^k)$, where *p* is prime > *n*.