Problem (3-4)

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Problem 3

1/1 point (graded)

Find integers $A, B, C,$ and D satisfying the following:

$3^4 \equiv A \pmod{31}$ $\quad 0 \leq A \leq 30$

$3^8 \equiv B \pmod{31}$ $\quad 0 \leq B \leq 30$

$3^{16} \equiv C \pmod{31}$ $\quad 0 \leq C \leq 30$

$3^{20} \equiv D \pmod{31}$ $\quad 0 \leq D \leq 30$

Find A, B, C and D.

$A =$ 19 ✔Answer: 19 | $B =$ 20 ✔Answer: 20 | $C =$ 28 ✔Answer: 28 | $D =$ 5 ✔Answer: 5

19 | 20 | 28 | 5

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Answers are displayed within the problem

Problem 4

1/1 point (graded)

Choose the incorrect statement.

- Many modern public key cryptosystems are constructed using prime numbers.
- Fermat's Little Theorem is very useful to construct and analyze modern cryptosystems.
- Given $A, B,$ and N, it is a computationally hard problem to calculate K satisfying $AK \equiv B \pmod{N}$ if K and N are large. It is called the Discrete Logarithm Problem.
- The exponentiation $\pmod{N}$ is a complicated operation. Given A, K, N, it is a computationally hard problem to calculate $AK \pmod{N}$ if K and N are large. It is called the Exponentiation Problem. ✔

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