Assignment 5

Do Monday, April 16, 07 at 1:00 AM in Class

Remarks: Show your work and explain every step. If you don't provide enough explanation, you may get no credit or partial credit.

(1) Find the quotient and the remainder when a is divided by b, where
   (a) $a = 100$, $b = 47$.
   (b) $a = -100$, $b = 47$.
   (c) $a = 100$, $b = -47$.
   (d) $a = -100$, $b = -47$.

(2) Find the canonical factorization of 440, 1225, 528.

(3) Find the following in $\mathbb{Z}_{129}$:
   (a) $120 \oplus 30$.
   (b) -20.
   (c) $(20)^{-1}$.

(4) Find $\gcd(147, 50)$ and find α and β such that $\alpha(147) + \beta(50) = \gcd(147, 50)$. Indicate which is which.

(5) Find the following in $\mathbb{Z}_{299}$:
   (a) -100.
   (b) $(100)^{-1}$.
   (c) $250 \oplus 240$.
   (d) $20 \odot 30$.

(6) Is 571 prime? Explain.