M328K Homework 7

Joshua Dong

March 8, 2014

0.1 4.3.10

Find $x \in \mathbb{Z}$ such that
$x \equiv 9 \pmod{10}$,
$x \equiv 9 \pmod{11}$, and
$x \equiv 0 \pmod{13}$.

0.2 4.3.20.b

Find $x \in \mathbb{Z}$ such that
$x \equiv 2 \pmod{14}$,
$x \equiv 16 \pmod{21}$, and
$x \equiv 10 \pmod{30}$.

0.3 4.3.20.e

Find $x \in \mathbb{Z}$ such that
$x \equiv 7 \pmod{9}$,
$x \equiv 2 \pmod{10}$, and
$x \equiv 3 \pmod{12}$.
$x \equiv 6 \pmod{15}$.

0.4 4.3.32

Show that the system
$x \equiv 1 \pmod{2}$,
$x \equiv 0 \pmod{4}$,
$x \equiv 0 \pmod{3}$,
$x \equiv 2 \pmod{12}$,
$x \equiv 2 \pmod{8}$,
$x \equiv 22 \pmod{24}$
is a covering set of congruences.

0.5 4.3.36

Find all solutions of the congruence $x^2 + 6x - 31 \equiv 0 \pmod{2^3 3^2 5^2}$.