Math 42-Number Theory
Problem of the Day #8
Due Thursday, March 3, 2011

1. Using linear diophantine equations, find a that satisfies the following.

$$\begin{aligned} a &\equiv 0 \mod 5 \\ a &\equiv 0 \mod 7 \\ a &\equiv 1 \mod 22 \end{aligned}$$

Find b that satisfies

$$\begin{aligned} b &\equiv 0 \mod 5 \\ b &\equiv 1 \mod 7 \\ b &\equiv 0 \mod 22 \end{aligned}$$

and c that satisfies

$$\begin{aligned} c &\equiv 1 \mod 5 \\ c &\equiv 0 \mod 7 \\ c &\equiv 0 \mod 22 \end{aligned}$$

Use a, b, c to find x that satisfies

$$\begin{aligned} x &\equiv 1 \mod 5 \\ x &\equiv 2 \mod 7 \\ x &\equiv 3 \mod 22 \end{aligned}$$