Math 353 **Homework 8** **Due Wed., Apr. 7, 2004**

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1. – §9.3 – 3c (ungraded).

2. – §9.3 – 7ab (ungraded).

3. – §11.1 – 1cd (ungraded).

4. – §9.2 – 10.

5. – §9.3 – 4bc

6. – §11.1 – 2cd.

7. – §11.1 – 4.

8. – ($\mathcal{E}$) Find all primitive roots a ($mod\ 11^2$) with the property that $a \equiv 2$ ($mod\ 11$). (Hint: $2^{10} = 1024 \equiv 56 = 1 + 5 \cdot 11$ ($mod\ 11^2$).)

9. – ($\mathcal{E}$) Three integers x, y, z are said to be in **arithmetic progression modulo** m if $y - x \equiv z - y$ ($mod\ m$). Determine the number of integers a, $0 \leq a \leq 352$, so that a, a^2, a^3 are in arithmetic progression modulo 353 (a prime).

10. – ($\mathcal{E}$) Determine the number of integers a, $0 \leq a \leq 1535$, so that a, a^2, a^3 are in arithmetic progression modulo $1536 = 3 \cdot 2^9$ (not a prime).