1. For $n = 8, 27$, find all positive integers less than n and relatively prime to n.

2. If $a = 2^4 \cdot 3^2 \cdot 5 \cdot 7^2$ and $b = 2 \cdot 3^3 \cdot 7 \cdot 11$, determine $gcd(a, b)$ and $lcm(a, b)$.

3. Determine 51 mod 13.

4. $gcd(12, 35) = 1$, of course. Find integers s and t so that $1 = 12s + 35t$. Are s and t unique?

   Remember to use the Euclidean Algorithm: use division repeatedly (you may need to look in your books)

Let $S = \mathbb{R}$ and define $a \sim b \iff a^2 = b^2$.

1. Show $\sim$ is an equivalence relation.
2. What are the equivalence classes?

September 6, 2002