7.6 #3

We know that 5 is a primitive root for p = 1223 (prime), and that $3^{611} \equiv 1$ (mod 1223).

$5^x \equiv 3$ (mod 1223)

and (p-1)/2 = 611, so since (a calculator computation shows that mod 1223: $3^{10} \equiv 345$, $3^{100} \equiv 729$, $3^{600} \equiv 618$, $3^{611} \equiv 3^{600}3^{10}3 \equiv 618 * 345 * 3 \equiv 1$)

$3^{611} \equiv 1$ (mod 1223), (rather than -1)

x must be even.