Number Theory HW Week 2

1. 2.2 #2 Show that any integer of the form $6k+5$ is of the form $3j+2$, but not vice versa.
2. 2.2 #6 Show any cube is of the form $7k$ or $7k+1$ or $7k-1$.
3. 2.3 #5 Show that one of $a$ $, a+2,$ $a+4$, is divisible by 3.
4. 2.3 #9 Show the difference of 2 consecutive cubes is not even.
5. 2.3 #14a Show that $\left(2a+1, 9a+4\right)=1.$
6. Consider 129200 and 44982. Find the GCD by factoring and also by using the Euclidean Algorithm. Also write the GCD as a linear combination of the two numbers.

Point values: 6 is worth 6 pts, 1-5 are worth 4 pts.