Math 55: Homework 2

Due Friday, June 26

1. Suppose that a and b are integers such that $3a + 3 = b - 2$. Prove that b is even if and only if a is odd.

2. Suppose that a and b are real numbers such that $a \cdot b = 30$. Prove that $a \neq 3$ or $b \neq 5$.

3. Prove that if n is an integer then $n(n + 1)(2n + 1)$ is divisible by 3. You may take it for granted that any integer n can be written in the form $3k$, $3k + 1$, or $3k + 2$ for some integer k.