

Intermediate Analysis - Homework #1

Due Friday, September 9

1. Suppose that p and q are integers. Recall that an integer m is even iff $m = 2k$ for some integer k and m is odd iff $m = 2k + 1$ for some integer k . Prove the following.

(a) If p is odd and q is odd, then $p + q$ is even.

(b) If p is odd and q is odd, then pq is odd.

2. Prove or give a counterexample: The sum of any three consecutive integers is divisible by 3 (e.g., $4 + 5 + 6$ or $9 + 10 + 11$).

3. If $U = A \cup B$ and $A \cap B = \emptyset$, then $A = U \setminus B$.