Exam 2

p. 162 no. 49 "The difference of any two even integers is even."

Theorem: The difference of any two even integers is even

Proof: Let m and n be arbitrary even numbers such that $m \in \mathbb{Z}$ and $n \in \mathbb{Z}$.

$m = 2r$ for some $r \in \mathbb{Z}$	Definition of even
$n = 2s$ for some $s \in \mathbb{Z}$	Definition of even
$m - n = 2r - 2s$	Substitution
$m - n = 2(r - s)$	Fundamental theorem of algebra
Let $k = r - s \in \mathbb{Z}$	Closure of integers in $\mathbb{Z}$
$m - n = 2k$	Even by definition of even