Introduction to Algebraic Proof

1) Prove   odd + odd = even

Let $2n$ be an even integer
     where n is an integer

$2n+1$ is an odd integer

$2m+1$ is an odd integer
     where m integer

odd + odd

$2n+1 + 2m+1 = 2n + 2n + 2$

$= 2(n + m + 1)$

2 is a factor

$\therefore$ even

2)   even + odd = odd

$2n + 2m+1 = 2n + 2n + 1$

$= 2(n + m) + 1$

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n   n+1   n+2

Prove the sum of 3 consecutive integers
     is divisible by 3

$$n + n+1 + n+2 = 3n + 3$$
$$= 3(n+1)$$
$$\therefore \text{ a multiple of } 3$$