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Lab 6

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1. Direct Proof

If x is an even integer and y is an odd integer, then x^2 + y^2 is odd.

X= 2k

Y = 2k + 1

X^2 = 4k^2

Y^2 = 4k^2 + 4k + 1

X^2 + y^2 = 8k^2 + 4k + 1

X^2 + y^2 = j + 1

QED

1. A. if a \* b is odd, then a and b are odd

Contra: if a and b are even, then a \* b is even

A = 2k

B = 2k

A \* b = 4k^2

A \* b = 2(2k^2)

A\*b = 2 j

QED

B. if n is an integer and n^3 + 5 is odd, then n is even

Contra: if n is odd, then n is not an integer or n^3+5 is even

N= 2k + 1

N^3 = 8k^3 + 12k^2 + 6k + 1

N^3 + 5 = 2( 4k^3 + 6k^2 + 3k + 3)

N^3 + 5 = 2 j

QED