Exercise 4.7

Introduction to Discrete Mathematics
MATH 2001

SEBASTIAN CASALAINA

ABSTRACT. This is Exercise 4.7 from Hammack [Ham13, Ch. 4]:

Exercise 4.7. Use the method of direct proof to prove the following statement: *Suppose* $a, b \in \mathbb{Z}$. *If* $a \mid b$, *then* $a^2 \mid b^2$.

Solution. Suppose a and b are integers, and that a divides b. By definition, there exists an integer n such that $b = na$. Therefore, $b^2 = (na)(na) = n^2a^2$, which, since n^2 is an integer, means by definition that a^2 divides b^2. □

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REFERENCES

[Ham13] Richard Hammack, *Book of proof*, Creative Commons, 2013.

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