

Lesson 7 Problem 3 Solution

Konstantin Miagkov

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Problem 1.

We will do part b) directly: Let's take any three distinct positive integers x, y, z , and set our numbers to be xy, yz and xz . They are all distinct: indeed, if $xy = yz$, then $x = z$, and we took x, y, z to be distinct. Same goes for the other pairs. Once we know that xy, yz and xz are distinct, we just need to check that the product of any two is divisible by the third. Indeed, $xz \cdot yz = xy \cdot z^2$ and so is divisible by xy , $xz \cdot xy = yz \cdot x^2$ and so is divisible by yz , $yz \cdot xy = xz \cdot y^2$ and so is divisible by xz . A numerical example representing this construction would be for $x = 1, y = 2$ and $z = 3$, yielding 2, 3, 6.