

Math 301**Quiz 2**

Show all work in a neat and organized fashion. Clearly indicate your answers.
10 points possible.

1. (4 pts.) There are five different German books, nine different Latin books, and twelve different Chinese books.

(a) In how many different ways can these books be placed on a bookshelf?

(b) In how many different ways can these books be placed on a bookshelf if all books in the same language are grouped together?

2. (2 pts.) Here is the truth table for a Boolean operation denoted by the symbol \heartsuit .

x	y	$x \heartsuit y$
T	T	F
T	F	T
F	T	T
F	F	F

Use a truth table to show that \heartsuit obeys the associative property. That show that $(x \heartsuit y) \heartsuit z = x \heartsuit (y \heartsuit z)$.

3. (4 pts.) Let x be an integer. Prove that x is odd if and only if $x + 1$ is even.