



SET NUMBERS AND ARITHMETIC

Why

How does the number of elements change with unions, and products.

Results

There are a few nice relations.¹ Recall from **Finite Sets** that the union and product of finite sets is finite. Also, the power of a finite set is finite.

Proposition 1. *Let A and B be finite sets with $A \cap B = \emptyset$. Then $|A \cup B| = |A| + |B|$.*

Proposition 2. *Let A and B be a finite sets Then $|A \times B| = |A| \cdot |B|$.*

Proposition 3. *Let A and B be a finite sets Then $|A^B| = |A|^{|B|}$.*

Proposition 4. *Let A be a finite set. Then $|A^*| = 2^{|A|}$.*

¹Proofs will appear in future editions.

