Answer on Question #67464 – Math – Calculus

Question

Given any two sets C and D, under what condition on them will C×D and D×C have the same number of elements? Give reason for your answer

Solution

By the definition of the power of the product of two sets implies that

$$|C\times D|=|C|\cdot|D|.$$

But then

$$|D\times C|=|D|\cdot|C|$$

and since

$$|C|\cdot|D|=|D|\cdot|C|,$$

we have that

$$|C\times D|=|D\times C|$$

for arbitrary sets C and D.

Hence sets $C\times D$ and $D\times C$ have the same number of elements.

Answer: sets C and D are arbitrary.