Answer on Question #48802 – Math – Combinatorics | Number Theory

Task:

4 points out of 8 points in a place are collinear. Number of different quadrilateral that can be formed by joining them is:

a) 56

b) 53

c) 76

d) 60

Solution:

We have 4 Collinear points and 4 Others.

We can have 4 of the 4 Others: 1.

We can have 3 Others and 1 Collinear: $C_4^3 C_4^1 = \frac{4!}{3!\cdot 1!}\frac{4!}{3!\cdot 1!} = 16$

We can have 2 Others and 2 Collinears: $C_4^2 C_4^2 = \frac{4!}{2!\cdot 2!}\frac{4!}{2!\cdot 2!} = 36$

Therefore, there are: 36+16+1=53 quadrilaterals.

Answer: b) 53