

1. Find all rational solutions of the following equations:

(1) $x^2 + y^2 + z^2 = 1$

(2) $y^3 + x^2 - y^2 + xz = 0$

2. Find all integer solutions of the equation $75x - 39y = 13$.

3. Construct a circle of a given radius R , which passes through a given point A and is tangent to a given line l .

4. Construct a right isosceles triangle with hypotenuse connecting two given circles and the vertex with right angle at a given point.

5. Find the number of splitting of a natural number S into a sum of k natural numbers. The splittings which differ from each other by a permutation of summands are considered different.