

Problem Set 3

Intermediate Math Circles Winter 2018
Even More Fun With Inequalities

Two Variable Linear Inequalities

Graph the following regions that satisfy the inequalities

1. $x - 2y \geq 3$
2. $x - 2y \geq 3 \cap x - 2y \leq 6$
3. $5x + 3y < 12 \cup x - 2y \leq 6$

Triangle Inequality

1. A triangle can be formed having side lengths 4, 5 and 8. It is impossible however, to construct a triangle with side lengths 4, 5 and 10. Using the side lengths 2, 3, 5, 7 and 11, how many different triangles *with exactly two equal sides can be formed?*
2. A triangle can be formed having side lengths 4, 5 and 8. It is impossible however, to construct a triangle with side lengths 4, 5 and 10. Ron has eight sticks, each having an integer length. He observes that he cannot form a triangle using any three of these sticks as side lengths. What is the shortest possible length of the longest of the eight sticks?