

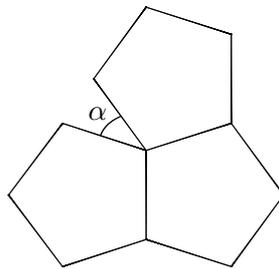
FINAL ROUND 21.3.2013

1. Integers a and b are known to be such that each of the numbers $\frac{a}{7}$, $\frac{b}{7}$ and $\frac{a+b}{25}$ is larger than one and smaller than two. What numbers are a and b ?

2. Find all the numbers x for which

$$(x - 2012)(x - 2013) = (x - 2013)(x - 2014).$$

3. There are five regular pentagons in the following picture:

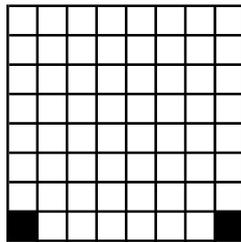


How large is the angle marked in the picture?

4. Each square in an 8×8 -grid can be white or red. Each minute the colors of the grid change as follows:

- If a square has a common side with a red square, then its color will be red.
- If a square does not have a common side with a red square, then its color will be white.

In the beginning, the following squares are red:



Does the entire grid become red eventually?