

- A1. Find the point of intersection of the lines $ax + y = 2$ and $x - y = 3$. For which values of the constant a are both coordinates of the point of intersection positive?
- A2. An advance tax of 31% has formerly been withheld from a person's salary. When the person's gross salary increases by 60 euro, his net salary, because of a simultaneous increase in the advance tax by 2 percentage points (units), increases only 21 euro. Find the person's gross and net salary after the salary increase.
- A3. The side lengths of a quadrilateral are a , 5, 7 and b . The angle between the first and second side is 60° , and the angle between the second and third side 165° . Find the smallest possible value of b . What is the value of a in this case? (Exact values and approximate values to an accuracy of two decimal places.)
- A4. A particle moves in the xy -plane, starting from the origin. It first moves along the x -axis to the point $(1, 0)$, whereafter its path is formed by repeating the following procedure: the particle turns 90° to the left and moves rectilinearly a distance equal to $2/3$ of the distance covered in the previous step. Draw a picture of the path after at least 5 repetitions. Which point in the xy -plane does the particle approach, when the number of repetitions grows without limit?
- A5. Three billiard balls with radius r lie on a table. Each of the balls touches the other two balls.
- What would the maximum radius be for a ball that can drop down between the billiard balls onto the table?
 - What would the maximum radius be for a ball that lies on the table between the billiard balls?
- (Give exact values)
- A6. A rainwater barrel in the form of a circular cylinder has a volume of 200 litres. The ratio of the height of the barrel to the diameter of its bottom circle is 3:2. When the barrel was tilted 30° , the water in the barrel began to flow over the brim. How much water did the barrel contain? (Answer in litres to an accuracy of one decimal place.)