1. We need to enclose a field with a fence. We have 500 feet of fencing material and a building is on one side of the field and so won’t need any fencing. Determine the dimensions of the field that will enclose the largest area.

2. We want to construct a box with a square base and we only have 10 m² of material to use in construction of the box. Assuming that all the material is used in the construction process determine the maximum volume that the box can have.

3. Determine the point(s) on \( y = x^2 + 1 \) that are closest to (0,2).