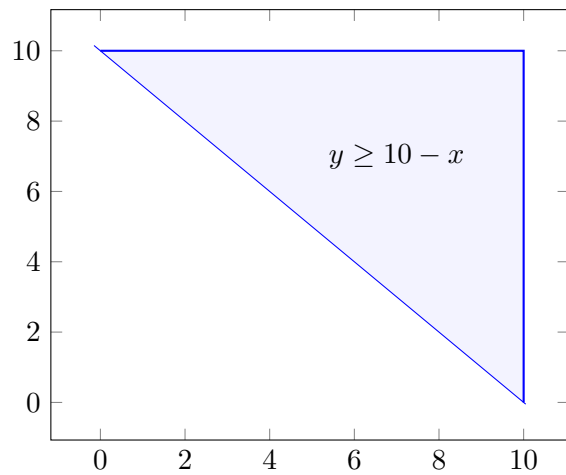
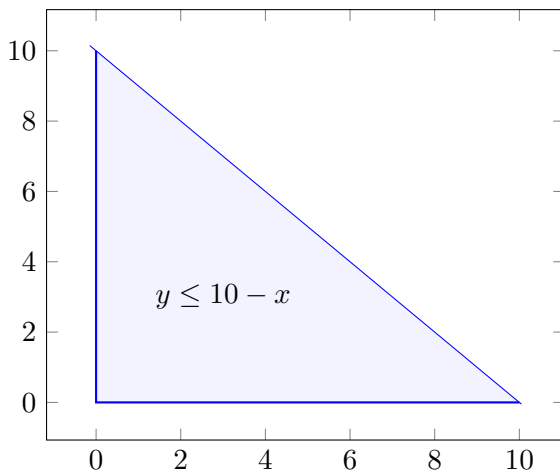
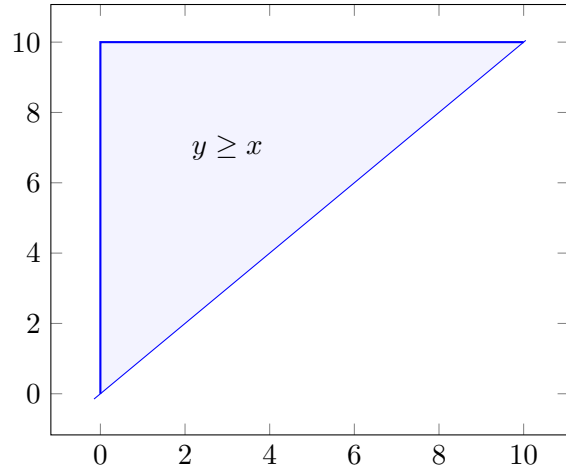
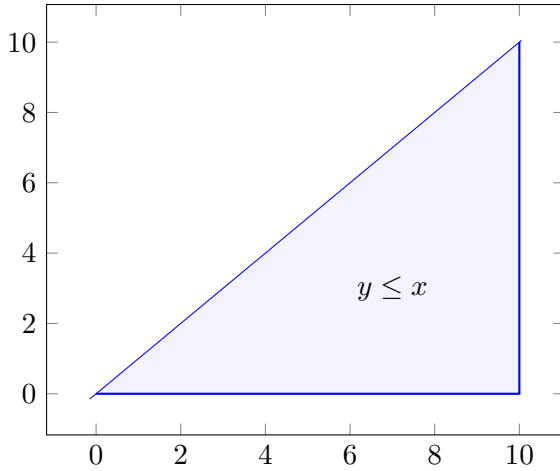


Regions and Polygons

Planar Regions

The slope-intercept formula for a line can be converted into a set of points called a *region* by replacing the equality symbol (i.e., =) with a relational operator (e.g., <).

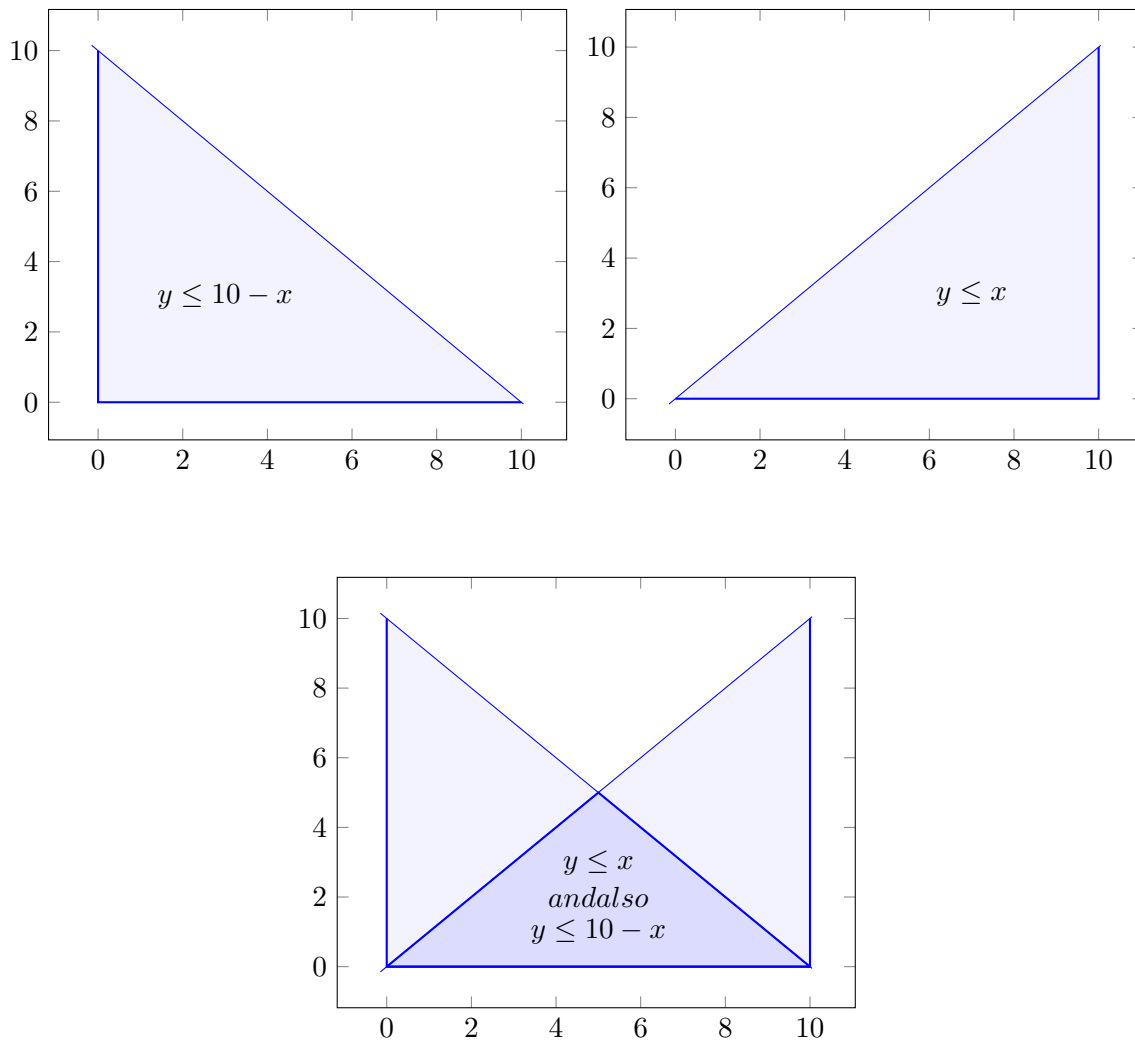


Intersections

Intersections of regions can be created through *conjunction*. In SML, *andalso* denotes logical conjunction. Let r_1 and r_2 denote the Boolean formulas describing two regions. The formula

$$(r_1 \text{ andalso } r_2)$$

denotes the region consisting of all points that belong both in r_1 and in r_2 .



Polygons

A *polygon* is a sequence of line segments (the sides of the polygon) in plane (e.g., the xz -plane) which form a *closed chain*. In a graph, a closed chain is sequence of edges that forms a loop (also known as a cycle). For example, consider a graph whose vertex set is $\{v_1, v_2, \dots, v_n\}$, and whose edge set is $\{(v_1, v_2), (v_2, v_3), (v_{n-1}, v_n), (v_n, v_1)\}$. The edges in this graph form a *closed chain*. Examples of polygons include triangles, rectangles, and pentagons.

