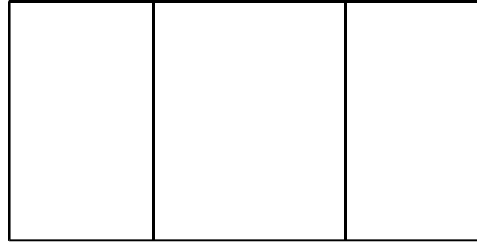
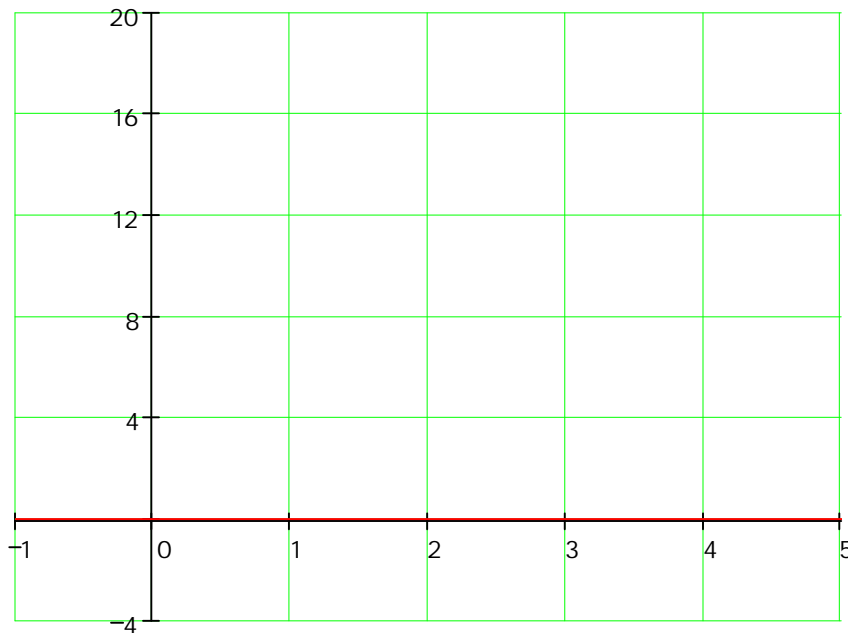


**Information:** A rectangular garden is split into three smaller rectangular regions using fencing material that is parallel to two of the sides. Fencing material is also to be placed around the outside of the garden. See the diagram below. A total of 16 metres of fencing material is used.



- Express the area  $A(x)$  of the garden as a function of its width (the vertical direction in the diagram).
- Sketch the graphs of the functions  $A(x)$  and  $\frac{1}{A(x)}$  on the grid below.



- Give the domain and range of the function  $A(x)$ .
- Give the domain and range of the function  $\frac{1}{A(x)}$ .
- Determine the equation of the quadratic function having the same vertex as  $y = 3x^2 - 12x + 15$  which passes through the point  $(-1, -4)$ .
- Draw an accurate graph of the function calculated in the previous bullet.

