BECA / IB Math 03-Quadratic functions Name:
14 January 2022

3.7 Exit Note Quiz: Applications of quadratic functions

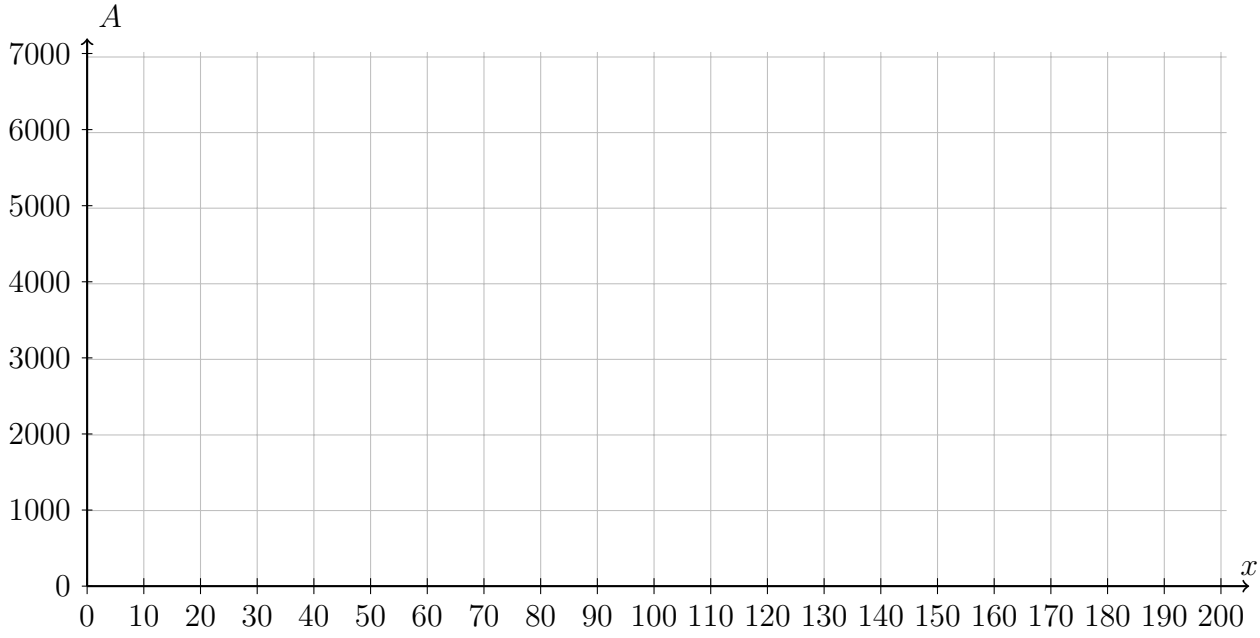
1. A rectangular picture frame has a perimeter of 320 centimeters.

   (a) Let x be the width of the frame in cm. Find an expression in terms of x for the height of the frame.

   (b) Find an expression for the area of the frame, $A\,\text{cm}^2$, in terms of x.

   (c) Plot a graph of how the area varies with width. Mark the coordinates of the vertex and x-axis intercepts.

   (d) Explain what the coordinates of the vertex represent in the context of the situation.



Sum of an arithmetic series: $S_n = \frac{n}{2}(2u_1 + d(n-1))$

2. The first four terms of an arithmetic sequence are 6, 10, 14, 18.

   (a) Write down the common difference, d.

   (b) Show the the sum to n terms can be written as $2n^2 + 4n$.

   (c) The sum of n terms is 880. Write a quadratic equation to represent this information. Rearrange to equal zero and plot the function, showing the x-intercepts and the coordinates of the vertex.

   (d) State what information the positive x-intercept tells you about the sequence.