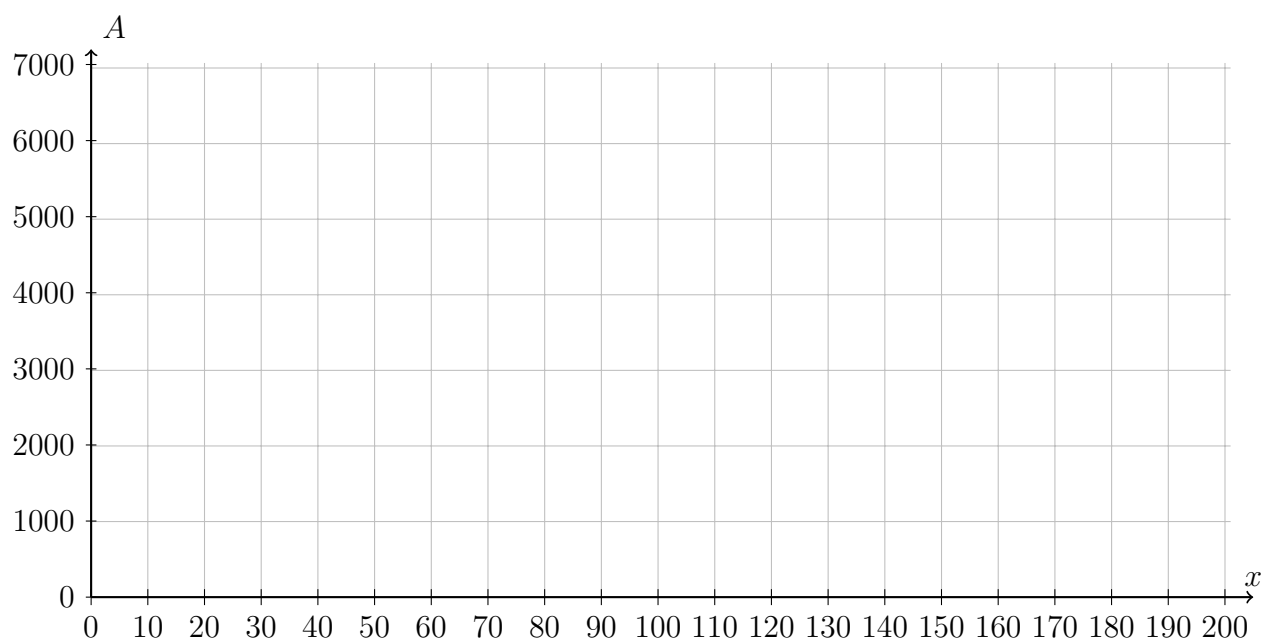


3.7 Exit Note Quiz: Applications of quadratic functions

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.

