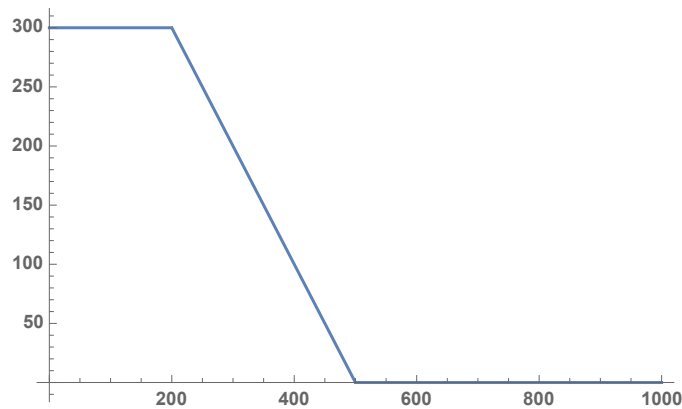UNIVERSITY OF TEXAS AT AUSTIN

Quiz #5
Continuous-dividend-paying assets.

Please, provide the **complete** solutions to the following problems:

Problem 5.1. (5 points) Draw the graph of the following function:

$$f(x) = \begin{cases} 300 & \text{for } 0 < x < 200 \\ 500 - x & \text{for } 200 \le x < 500 \\ 0 & \text{for } x \ge 500 \end{cases}$$
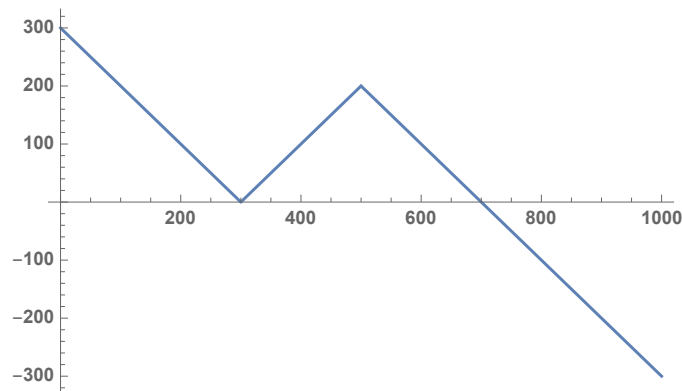
Solution:

Problem 5.2. (6 points) Draw the graph of the following function:

$$f(x) = \begin{cases} |x - 300| & \text{for } x < 500 \\ 700 - x & \text{for } x \ge 500 \end{cases}$$

Solution:

Problem 5.3. (2 points) An investor buys 10 shares of stock wich pays a continuous dividend with the dividend yield equal to 0.05. Assume continuous and immediate reinvestment of dividend into the same asset. How many shares does the investor own 2 years from the original purchase?

Solution:

$$10e^{0.05 \cdot 2} = 11.0517.$$

Problem 5.4. (2 points) An investor buys n_0 shares of continuous-dividend-paying stock with the aim of owning exactly 10 shares three years later. Assume that the dividend yield is equal to 0.02. Assume continuous and immediate reinvestment of dividend into the same asset. Calculate n_0.

Solution:

$$n_0 = 10e^{-0.02 \cdot 3} = 9.4176$$