

# HIGH SCHOOL CONSTRUCTED RESPONSE SAMPLE ITEMS

## Advanced Functions and Modeling Sample Item

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The function below determines the amount of yearly tax a person must pay, which is based on the amount of money they earn each year.

$$T(x) = \begin{cases} 0.10x, & \$0 \leq x < \$12,750 \\ 0.07(x - 12,750) + 765, & \$12,750 \leq x < \$60,000 \\ 0.0775(x - 60,000) + 4,072.50, & x \geq \$60,000 \end{cases}$$

- Describe the domain and range of the tax function in context.
- Identify the domain and range of  $t(x)$ .
- Based on the function provided, explain how the amount of tax owed changes if your earnings increase from \$10,000 to \$50,000.

