

10. [8 points] The shape of Percy’s favorite hill on his uncle’s farm can be visualized as the graph of a piecewise function $y = f(x)$. The function is quadratic on the interval $[-5, 3)$, and it’s exponential on the interval $[3, 10]$. The function satisfies the following properties:

- $x = -5$ is a zero of $f(x)$.
- $f(x)$ has y -intercept 10.
- $f(2) = 7$.
- $f(3) = 4$.
- For $3 \leq x \leq 9$, when x increases by one, $f(x)$ decreases by 20%.

Write a formula for $f(x)$. Your answer will be graded based on whether it satisfies the criteria in the problem.

$$f(x) = \begin{cases} \underline{\hspace{4cm}} & \text{for } \underline{\hspace{4cm}} \\ \underline{\hspace{4cm}} & \text{for } \underline{\hspace{4cm}} \end{cases}$$