7. [11 points] Below is a picture of the function \( f(x) \), which is piecewise linear. On the axes provided, sketch an antiderivative, \( F(x) \), of the function \( f(x) \), with \( F(2) = -1 \). To receive full credit:

- Label the points on the graph of \( F(x) \) where \( x = 0, 1, 2, 3, 4 \), including \( y \)-coordinates.
- Be sure the concavity and local extrema on the graph of \( F(x) \) are clear.

**Solution:**

\[
\begin{align*}
(0, -1) & \\
(1, -2) & \\
(2, -1) & \\
(3, 0.5) & \\
(4, 0) & \\
\end{align*}
\]