Part (e)(i)

Game plan: Use the slope at k to estimate how much G rises when the input increases by 2. The slope $G'(k) = 5 \cdot 8$ means an increase of about $5 \cdot 8$ in the output for each extra unit of input near k.

$$\begin{aligned} \text{Estimated increase} &= 2(5 \cdot 8) = 11 \cdot 6, \\ G(k+2) &\approx G(k) + 11 \cdot 6 \\ &= 197 + 11 \cdot 6 = 208 \cdot 6. \end{aligned}$$

Final Answer

$\boldsymbol{G(k+2) \approx 208 \cdot 6.}$

Part (e)(ii)

Game plan: Check whether the curve bends above or below the tangent used for our estimate.

Step 1: Check how the slope changes

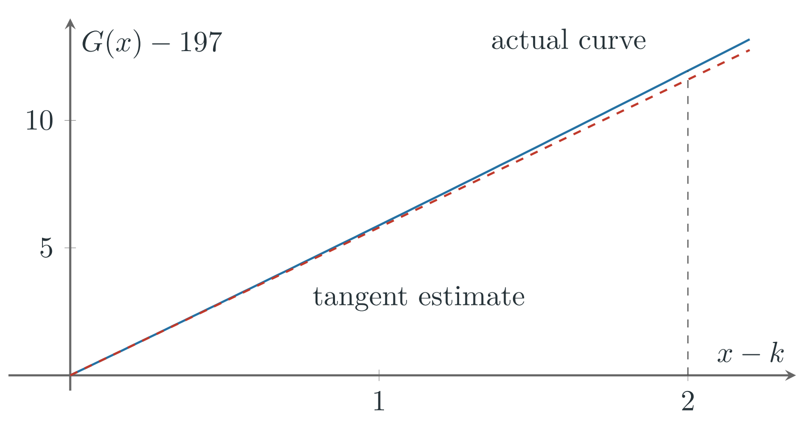
Since $G(x) = Ae^{bx}$ with $A > 0$ and $b > 0$:

$$G'(x) = Abe^{bx}, \qquad G''(x) = Ab^2e^{bx} > 0.$$

The slope is increasing. Our estimate kept the slope fixed at $5 \cdot 8$, so it misses the extra rise as we move to the right.

Step 2: Compare the curve with the tangent

The diagram shows the local exponential and its tangent. The vertical axis shows the rise above 197 so that the small gap is visible.



Final Answer

The estimate is **too small**, because the curve lies above its tangent.