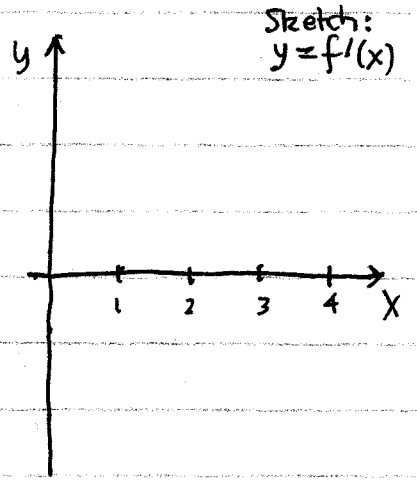
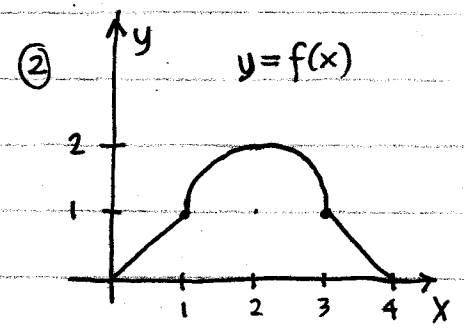
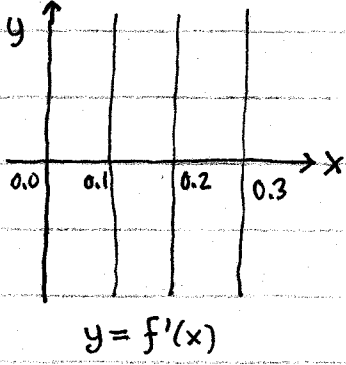
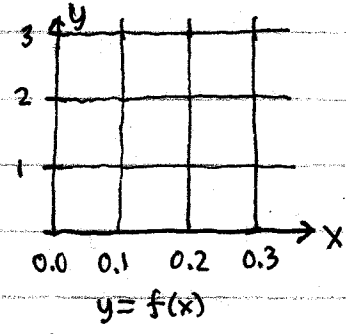


Show all work on this sheet, including mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation. Box final short answers.

① Given the following tabular data for  $x$  and  $f(x)$ , evaluate the numerical derivative values  $f'(x)$  for each data point (use table below).

b) Graph your data points connected by straight lines on the axes provided, choosing appropriate units for the tickmarks on the second graph:

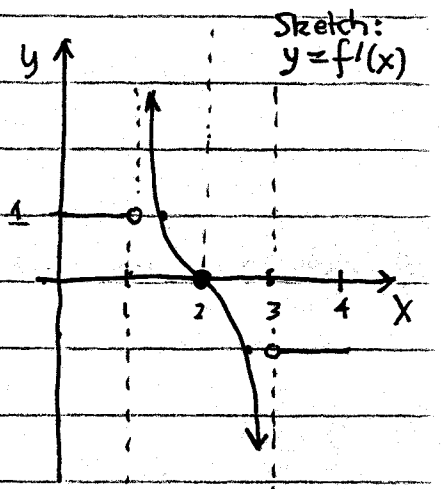
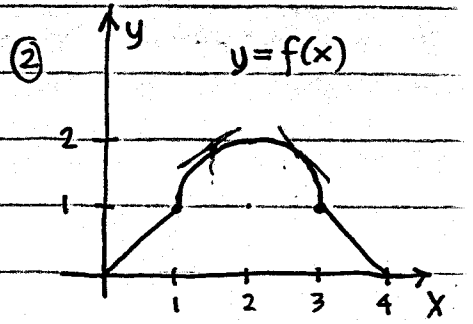
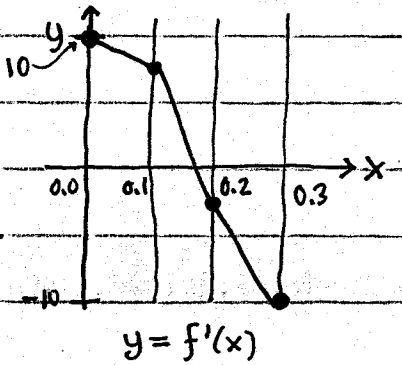
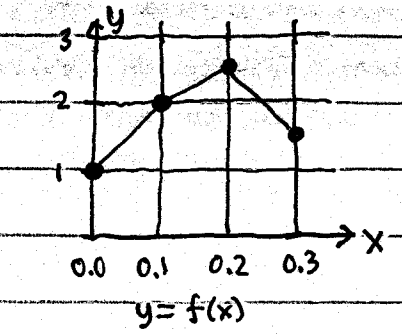
| $x$ | $f(x)$ | work ↓ | result ↓<br>$f'(x)$ |
|-----|--------|--------|---------------------|
| 0.0 | 1.0    |        |                     |
| 0.1 | 2.0    |        |                     |
| 0.2 | 2.5    |        |                     |
| 0.3 | 1.5    |        |                     |



① Given the following tabular data for  $x$  and  $f(x)$ , evaluate the numerical derivative values  $f'(x)$  for each data point (use table below).

b) Graph your data points connected by straight lines on the axes provided, choosing appropriate units for the tickmarks on the second graph:

| $x$ | $f(x)$ | work ↓                          | result ↓<br>$f'(x)$ |
|-----|--------|---------------------------------|---------------------|
| 0.0 | 1.0    | $\frac{2.0-1.0}{0.1-0.0} = 10$  | 10                  |
| 0.1 | 2.0    | $\frac{2.5-2.0}{0.2-0.1} = 5$   | 7.5                 |
| 0.2 | 2.5    | $\frac{1.5-2.5}{0.3-0.2} = -10$ | -2.5                |
| 0.3 | 1.5    |                                 | -10                 |



$\frac{\Delta f(x)}{\Delta x}$  average adjacent values, keep end values