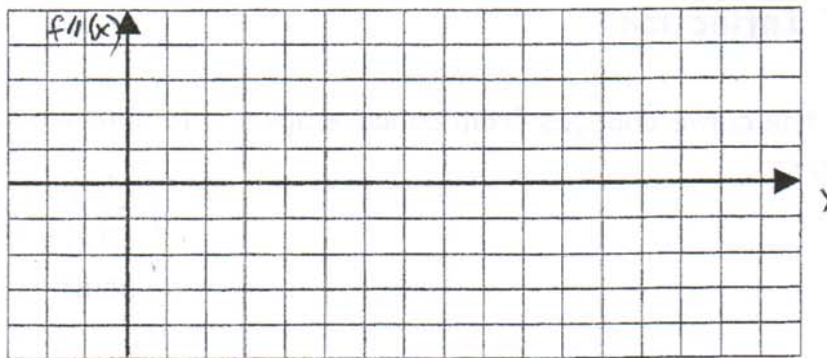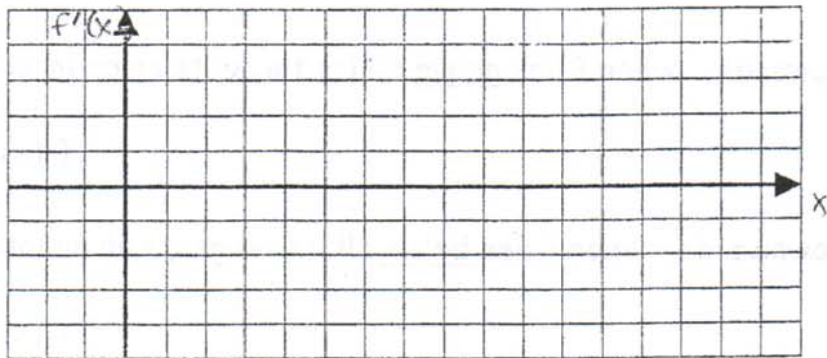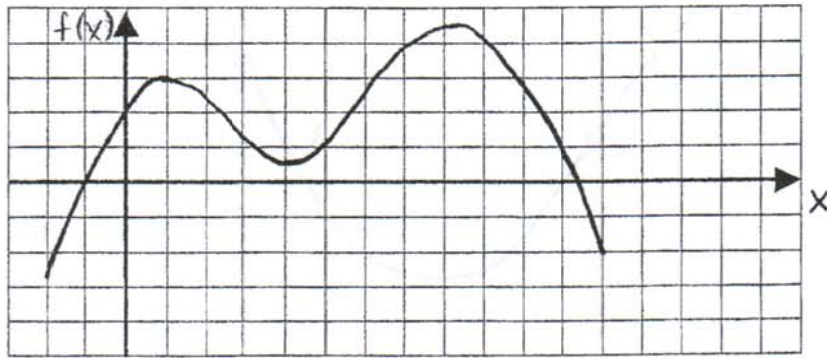## Concavity and Points of Inflection

Given the graph of $y = f(x)$, sketch the graphs of the first and second derivatives.

Draw tangents to the curve above and below the points of inflection.
Indicate if y″ > 0 or y″ < 0 above and below the points of inflection.

Concavity

Concave Upwards - when f lies <u>above</u> all its tangents on an interval

$$f''(x) > 0$$

Concave Downwards – when f lies <u>below</u> all its tangents on an interval

$$f''(x) < 0$$

Points of Inflection

- where the curve changes from concave upward to concave downward, or visa versa

$$f''(x) = 0 \ \underline{may} \text{ indicate a point of inflection}$$