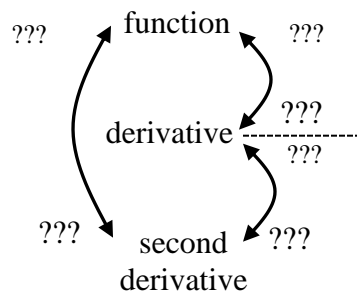


Finish the following sentences:

1. $f(x)$ is increasing when $f'(x) \dots$
2. $f(x)$ is decreasing when $f'(x) \dots$
3. $f(x)$ has a horizontal tangent when $f'(x) \dots$
4. [First Derivative Test] $f(x)$ has a relative minimum when $f'(x) \dots$
5. [First Derivative Test] $f(x)$ has a relative maximum when $f'(x) \dots$
6. [Second Derivative Test] $f(x)$ has a relative minimum when $f'(x) \dots$ and $f''(x) \dots$
7. [Second Derivative Test] $f(x)$ has a relative maximum when $f'(x) \dots$ and $f''(x) \dots$
8. $f(x)$ is concave up when $f''(x) \dots$
9. $f(x)$ is concave down when $f''(x) \dots$
10. $f(x)$ has a point of inflection when the graph of $f(x) \dots$
11. $f(x)$ has a point of inflection when the graph of $f''(x) \dots$
12. $f''(x)$ is positive when the slope of $f'(x) \dots$
13. $f''(x)$ is negative when the slope of $f'(x) \dots$
14. $f''(x)$ changes sign when the slope of $f'(x) \dots$



Finish the following sentences:

1. $f(x)$ is increasing when $f'(x)$ is positive (i.e. the graph of $f'(x)$ lies above the x -axis).
2. $f(x)$ is decreasing when $f'(x)$ is negative (i.e. the graph of $f'(x)$ lies below the x -axis).
3. $f(x)$ has a horizontal tangent when $f'(x) = 0$.
4. [First Derivative Test] $f(x)$ has a relative minimum when $f'(x)$ changes sign from negative to positive.
5. [First Derivative Test] $f(x)$ has a relative maximum when $f'(x)$ changes sign from positive to negative.
6. [Second Derivative Test] $f(x)$ has a relative minimum when $f'(x) = 0$ and $f''(x) > 0$.
7. [Second Derivative Test] $f(x)$ has a relative maximum when $f'(x) = 0$ and $f''(x) < 0$.
8. $f(x)$ is concave up when $f''(x)$ is positive (i.e. the graph of $f''(x)$ lies above the x -axis).
9. $f(x)$ is concave down when $f''(x)$ is negative (i.e. the graph of $f''(x)$ lies below the x -axis).
10. $f(x)$ has a point of inflection when the graph of $f(x)$ (1) has a tangent line and (2) changes concavity.
11. $f(x)$ has a point of inflection when the graph of $f''(x)$ changes sign. (i.e. the graph of $f''(x)$ crosses the x -axis).
12. $f''(x)$ is positive when the slope of $f'(x)$ is positive. (i.e. the graph of $f'(x)$ is increasing).
13. $f''(x)$ is negative when the slope of $f'(x)$ is negative. (i.e. the graph of $f'(x)$ is decreasing).
14. $f''(x)$ changes sign when the slope of $f'(x)$ changes sign (i.e. the graph of $f'(x)$ changes from increasing to decreasing, or the graph of $f'(x)$ changes from decreasing to increasing).

