


#14 FIRST AND SECOND DERIVATIVES 2.5

COMPLETE EACH BLANK WITH THE BEST ANSWER.

- If $f(x)$ is increasing, then $f'(x)$ is positive.
- $f'(x)$ is negative if $f(x)$ is decreasing.
- $f''(x)$ is positive if $f(x)$ is c. up.
- $f''(x)$ is negative if $f'(x)$ is decreasing.
- If $f(x)$ is concave down, then $f'(x)$ is decr.
- If $f'(x)$ is increasing, then $f''(x)$ is positive.
- If $f'(x)$ is decreasing, then $f(x)$ is c. down. incr, c.d
- If $f'(x) > 0$ and $f''(x) < 0$, then $f(x)$ looks like  [DRAW A SKETCH].
- If $f(x)$ is an exponential decay curve, then $f'(x)$ is negative and increasing.
- If $f(x)$ has an inflection point, then $f(x)$ has a change in concavity.
- If $f(x)$ has a horizontal tangent, then $f'(x)$ has a zero.
- If $f'(a) = 0$, then $f(x)$ has a horiz tangent at a.
- If $f'(x)$ has a change of sign and is always defined, then $f(x)$ has either a rel. max or rel. min.
- If $f(x)$ has a corner at $x = a$, then $f'(a)$ is undefined \rightarrow not cont \rightarrow jump discount
- If $f'(x) = 0$ for all values of x , then $f(x)$ is constant.
- If $f''(x) = 0$ for all values of x , then $f(x)$ is linear.
- If $f'(a) = 2$ and $g(x) = f(x) - 5$, then $g'(a) =$ 2.
- If $f(x)$ is concave down everywhere, then $-f(x)$ is c. up.
- If the slope of $f(x)$ increases, then $f(x)$ is c. up.
- If $f''(x)$ has an x-intercept, then $f'(x)$ has a horiz tangent (max/min).
- If $f(x)$ has a vertical tangent at $x = a$, then $f'(a)$ is undefined.