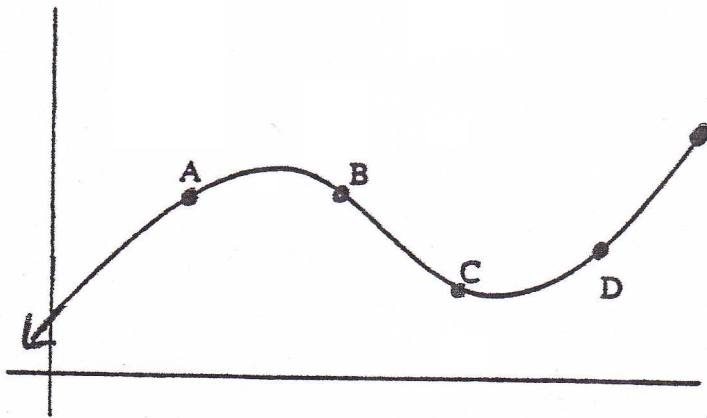


Understanding how the idea of 1st and 2nd derivative relate to a graph:

Look at the graph below, then answer the following questions:



1. At which points is the first derivative positive? Explain your reasoning?
2. At which points is the second derivative positive? Explain your reasoning?
3. Mark the sketch any points where the first derivative is zero? Explain your reasoning?
4. Are there any points where the first derivative is undefined? Explain your reasoning?
5. Are there any points where the second derivative is undefined? Explain your reasoning?

Fill in the table below using your knowledge of derivatives:

If f	Then f'	And f''
is increasing		
is decreasing		
is horizontal		
is straight but not horizontal		
is Concave up		
is Concave down		
has a maximum		
has a minimum		
has a plateau		

Sketch some examples to justify your answers!!

The following information was obtained from a continuous function $f(x)$.

$$f(-2) = 4; f(0) = 0; f(3) = 3; f(5) = -5$$

$f'(0)$ is undefined; $f'(3) = 0$; $f'(x) < 0$ when $x < 0$ or $x > 3$;

$f'(x) > 0$ when $0 < x < 3$.

$f''(-2) = 0$; $f''(0)$ is undefined; $f''(x) > 0$ when $x < -2$;

$f''(x) < 0$ when $-2 < x < 0$ or $x > 0$.

Sketch the graph of a function with these attributes.