CALCULUS 12: QUIZ SOLUTIONS

Question 1

For a function $f(x)$, if $f'(a)=0$, then what is true about the gradient of the tangent to the curve at $x=a$?

A. It is zero B. It is positive C. It is negative

Solution

$f'(x)$ is the gradient of $f(x)$ at any point x.

$f'(a)$ is the gradient of $f(x)$ at the point $x=a$.

If $f'(a)=0$, then the gradient of $f(x)$ at $x=a$ is zero.

So, the correct answer is A.

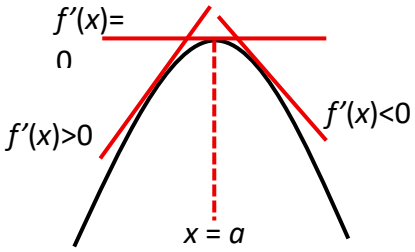
Question 2

If $f'(x)$ is zero at $x=a$ and if $f'(x)$ changes from positive to negative as x increases through the value a, what is true about $f(a)$?

A. It is a minimum B. It is a maximum C. It is a point of inflection

Solution

The correct answer is B.



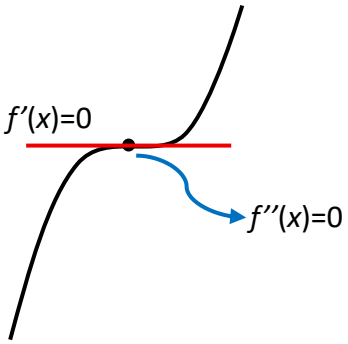
Question 3

If $f'(c)=0$ and $f''(c)=0$, what can be said about $f(c)$?

A. It is a minimum B. It is a maximum C. It is a point of inflection

Solution

The correct answer is C.



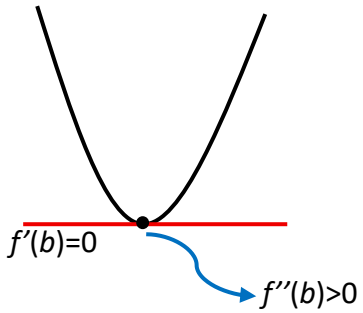
Question 4

If $f'(x)$ is zero at $x = b$ and $f''(b) > 0$, what can be said about $f(b)$?

A. It is a minimum B. It is a maximum C. It is a point of inflection

Solution

The correct answer is A.



Question 5

Is a point of inflection *always*, *sometimes*, or *never* a stationary point of the function $f(x)$?

A. Always B. Sometimes C. Never

Solution

A stationary point always has $f'(x) = 0$.

A point of inflection may occur when $f'(x) = 0$ or when $f'(x) \neq 0$.

So, the correct answer is B.