



Maxima and Minima 18.1 Q7

$$g(x) = -|x+1| + 3$$

We know that $-|x+1| \leq 0$ for every $x \in \mathbb{R}$.

Therefore, $g(x) = -|x+1| + 3 \leq 3$ for every $x \in \mathbb{R}$.

The maximum value of g is attained when $|x+1| = 0$

$$|x+1| = 0$$

$$\Rightarrow x = -1$$

$$\therefore \text{Maximum value of } g = g(-1) = -|-1+1| + 3 = 3$$

Hence, function g does not have a minimum value.

Maxima and Minima 18.1 Q8

$$f(x) = 16x^2 - 16x + 28 \text{ on } \mathbb{R}$$

$$= 16x^2 - 16x + 4 + 24$$

$$= (4x - 2)^2 + 24$$

Now,

$$(4x - 2)^2 \geq 0 \text{ for all } x \in \mathbb{R}$$

$$\Rightarrow (4x - 2)^2 + 24 \geq 24 \text{ for all } x \in \mathbb{R}$$

$$\Rightarrow f(x) \geq f\left(\frac{1}{2}\right)$$

Thus, the minimum value of $f(x)$ is 24 at $x = \frac{1}{2}$

Since $f(x)$ can be made as large as possible by giving different values to x .

Thus, maximum values does not exist.

Maxima and Minima 18.1 Q9

$$f(x) = x^3 - 1 \text{ on } \mathbb{R}$$

Here, we observe that the values of $f(x)$ increase when the values of x are

increased and $f(x)$ can be made as large as we please by giving large values to x .

So, $f(x)$ does not have the maximum value.

Similarly, $f(x)$ can be made as small as we please by giving smaller values to x .

So, $f(x)$ does not have the minimum value.

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