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Q11 : It is given that at  $x = 1$ , the function  $x^4 - 62x^2 + ax + 9$  attains its maximum value, on the interval  $[0, 2]$ . Find the value of  $a$ .

Answer :

$$\text{Let } f(x) = x^4 - 62x^2 + ax + 9.$$

$$\therefore f'(x) = 4x^3 - 124x + a$$

It is given that function  $f$  attains its maximum value on the interval  $[0, 2]$  at  $x = 1$ .

$$\therefore f'(1) = 0$$

$$\Rightarrow 4 - 124 + a = 0$$

$$\Rightarrow a = 120$$

Hence, the value of  $a$  is 120.