

Answer on Question #83321 – Math – Calculus

Question

Find the maximum and minimum values of the curve and distinguish them. $y=x^3-6x^2+9x+6$

Solution

$$y = x^3 - 6x^2 + 9x + 6$$

$$y' = 3 \cdot x^2 - 12 \cdot x + 9$$

$$y' = 0, \quad 3 \cdot x^2 - 12 \cdot x + 9 = 0, \quad x = 3, \quad x = 1$$

$$y(1) = 10, \quad y(3) = 6$$

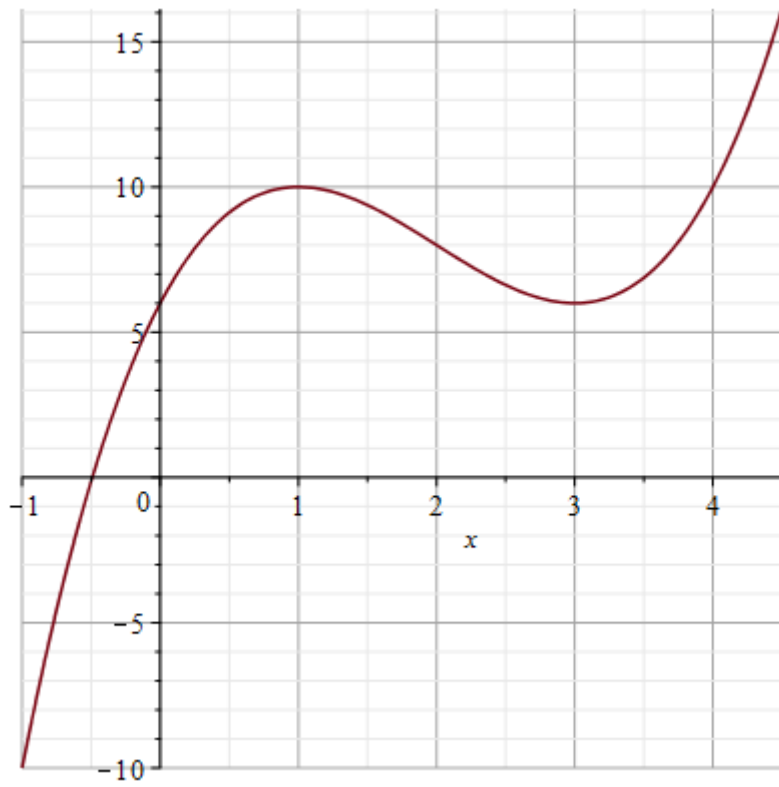
$$y'' = 6 \cdot x - 12,$$

$$y''(1) = -6 < 0 \quad \text{hence, } x = 1 \text{ is a point of maximum.}$$

$$y''(3) = 6 > 0 \quad \text{hence } x = 3 \text{ is a point of minimum.}$$

x	1	3
y	10	6
y'	0	0
y''	-6	6
Conclusion	\cap , max	\cup , min

Graph of the function: $y = x^3 - 6x^2 + 9x + 6$



Answer provided by <https://www.AssignmentExpert.com>