

Assignment 01

1. Find

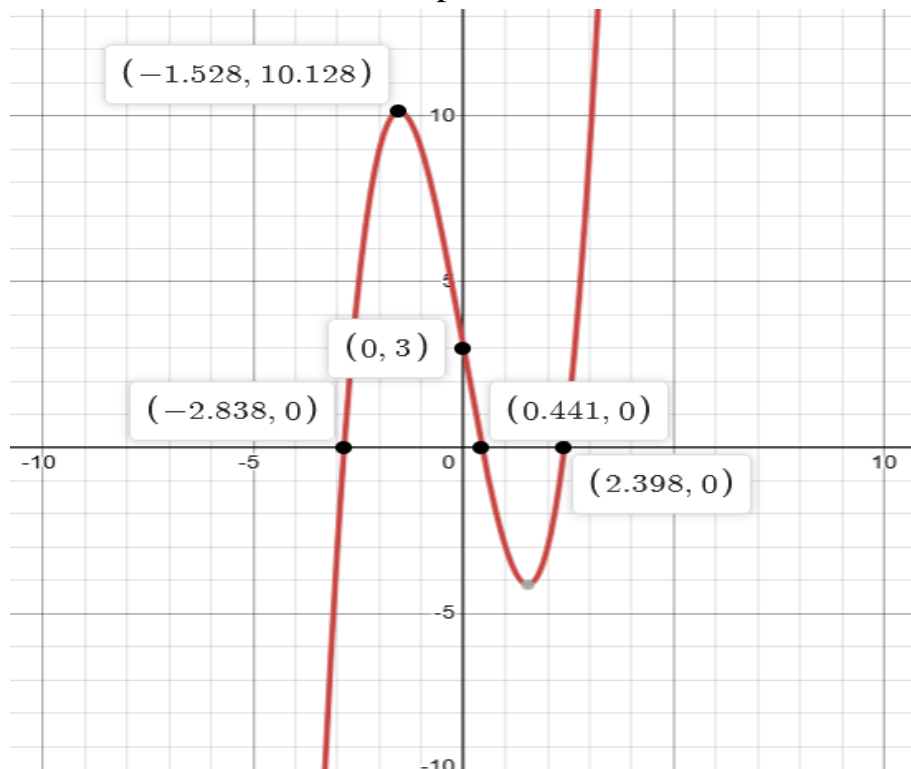
- (a) the intervals on which f is increasing,
- (b) the intervals on which f is decreasing,
- (c) the open intervals on which f is concave up,
- (d) the open intervals on which f is concave down, and
- (e) the x -coordinates of all inflection points

where

(a) $f(x) = x^4 + x^3 + x^2 + 5$

(b) $f(x) = (x + 2)^4$

2. The following figure represents the graph of the derivative of the function $f(x)$. Find the interval where the function is increasing and decreasing and the value of x where critical point exists.



3. Sketch the graph of the following function

(a) $f(x) = x^4 - 7x^2 + 3$

4. Find the value of $\frac{\partial w}{\partial x}$, $\frac{\partial w}{\partial y}$, $\frac{\partial w}{\partial z}$ at $(-1, -2, -7)$ where

$$w = \frac{1}{\sqrt{x^2 + y^3 + z^4}}$$

5. Using chain rule find the value of $\frac{\partial w}{\partial u}$, $\frac{\partial w}{\partial v}$, at $(-2, 2, 1)$

where $w = x^2 y^5 z^3 - 2x^3 z$, $x = u + 3v$, $y = 8u - v$, $z = \frac{u}{2v}$