ASSIGNMENT 5

SOWMYA BANDI

Download all python codes from

```
\begin{lstlisting}
https://github.com/Sowmyabandi99/Assignment5/
    blob/main/Ass5/assignment5.py
```

Latex-tikz codes from

```
https://github.com/Sowmyabandi99/Assignment5/
    blob/main/Ass5/main.tex
```

1 Question No 2.51

Find the intervals in which the function

$$f(x) = x^2 - 4x + 6 \tag{1.0.1}$$

is

1) increasing
2) decreasing

2 SOLUTION

Given equation can be written as

$$y = x^2 - 4x + 6 \tag{2.0.1}$$

$$\implies x^2 - 4x - y + 6 = 0 \tag{2.0.2}$$

From above equation,

$$\mathbf{V} = \begin{pmatrix} a & b \\ b & c \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \tag{2.0.3}$$

$\therefore$ a>0,the vertex of the parabola turns from decreasing to increasing.

From the graph(Fig.2.1),

1) f is increasing in interval (2,∞)
2) f is increasing in interval (-∞,2)

Plot of Tangent to the given curve -

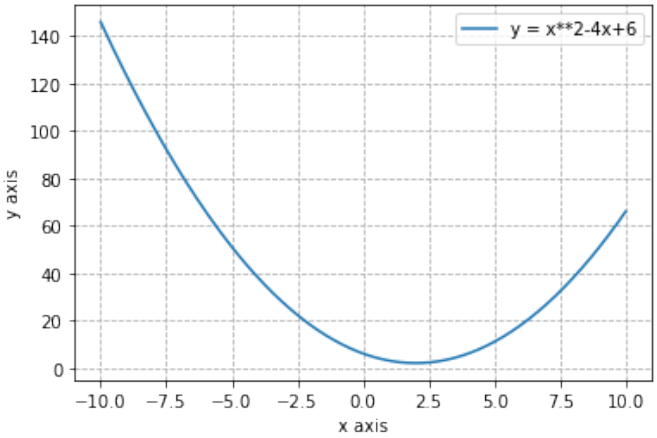

Fig. 2.1