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ASSIGNMENT 6

P.Kalpana

Download all python codes from

https://github.com/ponnaboinakalpana12/ Assignment6/Assignment6.py

and latex-tikz codes from

https://github.com/ponnaboinakalpana12/ Assignment6//Assignment6.tex

1 QUESTION No 2.16(QUAD FORMS)

Factorise $6x^2 + 17x + 5$.

2 SOLUTION

1) The given polynomial can be expressed as:

$$\mathbf{x}^T \begin{pmatrix} 6 & 0 \\ 0 & 0 \end{pmatrix} \mathbf{x} + \begin{pmatrix} 17 & 0 \end{pmatrix} \mathbf{x} + 5 = 0 \qquad (2.0.1)$$

Substitute y=0 in the above equation

$$6x^2 + 17x + 5 = 0 (2.0.2)$$

$$6x^2 + 2x + 15x + 5 = 0 (2.0.3)$$

$$(3x+1)(2x+5) = 0 (2.0.4)$$

$$\implies x = \frac{-1}{3}, \frac{-5}{2}$$
 (2.0.5)

$$\therefore (3x+1)(2x+5) = 6x^2 + 17x + 5$$
 (2.0.6)

Hence (3x+1) and (2x+5) are the factors. Plot the graph:

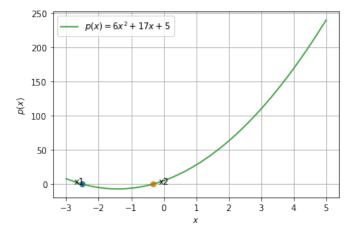


Fig. 2.1: Graph of $6x^2 + 17x + 5$.