ASSIGNMENT 1

Prabhav Singh- BT21BTECH11004

PROBLEM 9(b):-Using Properties of proportion solve for x, given

$$\frac{\sqrt{5x}+\sqrt{2x-6}}{\sqrt{5x}-\sqrt{2x-6}}=4$$

SOLUTION:-

Using Componendo and Dividendo rule that is if $\frac{a}{b}=\frac{c}{d} \implies \frac{a+b}{a-b}=\frac{c+d}{c-d}$; on the given expression

$$\frac{\sqrt{5x}+\sqrt{2x-6}}{\sqrt{5x}-\sqrt{2x-6}}=\frac{4}{1}$$

$$\frac{\sqrt{5x}+\sqrt{2x-6}+\sqrt{5x}-\sqrt{2x-6}}{\sqrt{5x}+\sqrt{2x-6}-\sqrt{5x}+\sqrt{2x-6}}=\frac{4+1}{4-1} \quad (1)$$

$$\frac{2\sqrt{5x}}{2\sqrt{2x-6}}=\frac{5}{3} \quad (2)$$

$$3(\sqrt{5x})=5(\sqrt{2x-6}) \quad (3)$$

$$9\times 5x=5\times 5\times(2x-6) \quad (4)$$

$$9x=10x-30 \quad (5)$$

$$\implies \boxed{x=30} \quad (6)$$