

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

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

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

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

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

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

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

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