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ASSIGNMENT 1

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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

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

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

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

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

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

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

$$\implies x = 30$$
 (6)