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$$x \in (2, 3) \Rightarrow 2 < x < 3$$

$$\left[\frac{5-x}{x} = \frac{5}{x} - 1 \right]$$

$$\frac{1}{2} > \frac{1}{x} > \frac{1}{3} \quad (\text{reciprocal})$$

$$\Rightarrow \frac{5}{2} > \frac{5}{x} > \frac{5}{3} \quad (\text{multiply by } 5)$$

$$\Rightarrow \frac{5}{2} - 1 > \frac{5}{x} - 1 > \frac{5}{3} - 1 \quad (\text{subtract } 1)$$

$$\Rightarrow \boxed{\frac{2}{3} < \frac{5-x}{x} < \frac{3}{2}}$$

$$\text{limit point} = \left[\frac{2}{3}, \frac{3}{2} \right]$$

→ not open
→ bounded
→ closed
→ compact
→ connected

option (c) & (d) correct