

Simplify completely:

$$1. \frac{\left(\frac{5}{x-2} + x\right) \cdot (x-2)}{\left(\frac{4}{x-2} - x\right) \cdot (x-2)} = \frac{\frac{5}{x-2} + \frac{x(x-2)}{x-2}}{\frac{4}{x-2} - \frac{x(x-2)}{x-2}} = \frac{\frac{x^2 - 2x + 5}{x-2}}{\frac{-x^2 + 2x + 4}{x-2}}$$

$$= \frac{x^2 - 2x + 5}{x-2} \cdot \frac{x-2}{-x^2 + 2x + 4}$$

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

$$\frac{5 + x^2 - 2x}{4 - x^2 + 2x}$$

$$2. \frac{\frac{7}{x^2-1} - 5}{\frac{8x}{x^2-1} + 3x}$$

$$3. \frac{\frac{5x + 5h - 4}{x+h} - \frac{5x-4}{x}}{h}$$

$$5x^2 + 5hx - 4x - [(5x-4)(x+h)]$$

$$5x^2 + 5hx - 4x - [5x^2 + 5hx - 4x - 4h]$$

$$5x^2 + 5hx - 4x - 5x^2 - 5hx + 4x + 4h$$

$$\frac{4h}{x(x+h)} \cdot \frac{1}{h} = \frac{4}{x(x+h)}$$

$$\begin{aligned} 4. \quad & \frac{5x^3(7x-1)^2 - 10x^4(7x-1)^3}{x^5} \\ & \frac{5x^3(7x-1)^2 [1 - 2x(7x-1)]}{x^5} \rightarrow [1 - 14x^2 + 2x] \\ & = \frac{5(7x-1)^2(-14x^2 + 2x + 1)}{x^2} \end{aligned}$$