

In this Learning Check, you are being assessed on the following learning goals: I can manipulate rational expressions into useful equivalent forms by simplifying, adding, subtracting, multiplying, and dividing.

Perform the following operations on the given rational expressions.

1.
$$\frac{(x+2)^2}{x-3} \cdot \frac{x-3}{x^2+3x+2}$$

3.
$$\frac{3-2x}{2x^2+5x-12} - \frac{2}{x+4} \xrightarrow{2 \times -3}$$

$$(2 \times -3) \times +4)$$

$$= \frac{3-2\times}{(2x-3)(x+4)} - \frac{(4x-6)}{(2x-3)(x+4)}$$

$$= 9 - 6 \times (2 \times -3)(\times +4)$$

$$= 3(3-2x) - 3(-3+2x) - 3(2x-3)$$

$$(2x-3)(x+4) = -3$$

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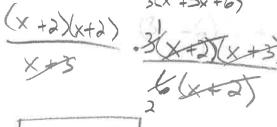
2.
$$\frac{2}{x^2 + 4x + 3} + \frac{x}{x+1} \xrightarrow{(x+3)} (x+3)$$

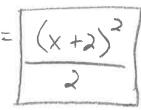
$$= \frac{2}{(x+3)(x+1)} + \frac{x^2+3x}{(x+3)(x+1)}$$

$$= \frac{(x+3)(x+1)}{(x+3)(x+1)}$$

4.
$$\frac{x + 4x + 4}{x + 3} \div \frac{6x + 12}{3x^2 + 15x + 18}$$

$$3(x^2 + 5x + 6)$$





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

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

$$=\frac{4x-8}{(x+2)(x-2)}$$