

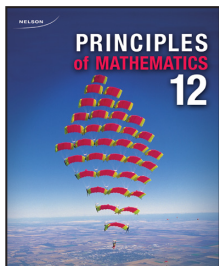
- If you have any difficulty with these solutions, please contact your teacher before continuing.

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The non-permissible value will be the same. ✓ The step that is different is finding the lowest common denominator, which is $12x^2$. ✓ In Example 2, Akie had only to change one of the rational expressions to make a common denominator. If the sum is changed to $\frac{3}{6x^2} + \frac{1}{4x}$, both expressions must be changed. ✓ The work for this new sum is shown below.

$$\left(\frac{3}{6x^2}\right)\left(\frac{2}{2}\right) + \left(\frac{1}{4x}\right)\left(\frac{3x}{3x}\right) = \frac{6}{12x^2} + \frac{3x}{12x^2} = \frac{6+3x}{12x^2} = \frac{3(2+x)}{3(4x^2)} = \frac{\cancel{3}(2+x)}{\cancel{3}(4x^2)} = \frac{2+x}{4x^2}, x \neq 0$$

As well, you can see that having to multiply both expressions results in a more complex sum, which means factoring and cancelling are required when simplifying the final answer.



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$$\frac{6}{n-3} - \frac{4}{n+2}$$

$$= \left[\left(\frac{6}{n-3} \right) \left(\frac{n+2}{n+2} \right) \right] - \left[\left(\frac{4}{n+2} \right) \left(\frac{n-3}{n-3} \right) \right] \quad \checkmark$$

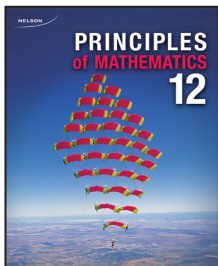
$$= \left[\frac{6n+12}{(n-3)(n+2)} \right] - \left[\frac{4n-12}{(n+2)(n-3)} \right] \quad \checkmark$$

$$= \frac{6n+12-(4n-12)}{(n-3)(n+2)}$$

$$= \frac{6n+12-4n+12}{(n-3)(n+2)} \quad \checkmark$$

$$= \frac{2n+24}{(n-3)(n+2)} \quad \checkmark$$

$$= \frac{2(n+12)}{(n-3)(n+2)} \quad \checkmark \quad n \neq 3, -2 \quad \checkmark$$



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$$\frac{2x}{x^2 - 1} - \frac{4}{x - 1}$$

$$= \left[\frac{2x}{(x - 1)(x + 1)} \right] - \left[\frac{4}{x - 1} \right]$$

$$= \left[\frac{2x}{(x - 1)(x + 1)} \right] - \left[\left(\frac{4}{x - 1} \right) \left(\frac{x + 1}{x + 1} \right) \right] \quad \checkmark$$

$$= \left[\frac{2x}{(x - 1)(x + 1)} \right] - \left[\frac{4x + 4}{(x - 1)(x + 1)} \right] \quad \checkmark$$

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

$$= \frac{2x - 4x - 4}{(x - 1)(x + 1)} \quad \checkmark$$

$$= \frac{-2x - 4}{(x - 1)(x + 1)} \quad \checkmark$$

$$= \frac{-2(x + 2)}{(x - 1)(x + 1)} \quad \checkmark \quad x \neq -1, 1 \quad \checkmark$$