Lesson 5.2: Operations on Rational Expressions

Complete the *Practice* below. When you have completed all the questions for *Lesson 5.2 Practice – II* with your best work, mark your work by first comparing your answers to the solutions provided in *Appendix 2: Solutions*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – II

1. Add or subtract the rational expressions. Give the answer in simplest form, and identify any non-permissible values.

   a. $\frac{7x-1}{4}+\frac{4x+3}{4}$

   b. $\frac{3m^2}{m-1}-\frac{3m}{m-1}$

   c. $\frac{x^2}{x-3}+\frac{3x}{x-3}-\frac{18}{x-3}$

2. Add or subtract the rational expressions. Give the answer in simplest form, and identify any non-permissible values.

a. $\frac{3}{2s+1} - \frac{2}{(s+3)(2s+1)}$

b. $\frac{a+4}{a} + \frac{a-8}{a-4}$

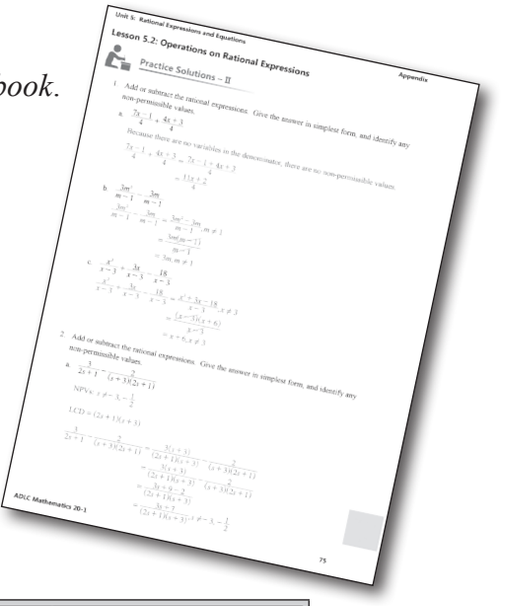
c. $\dfrac{1}{y-4} - \dfrac{2y+1}{y^2-8y+16} + \dfrac{3y-2}{y^2-16}$

3. Lara has made at least one error simplifying the rational expression $\frac{5}{x-3}+\frac{10}{x^2-9}-\frac{15}{x+3}$. Identify her error(s), and correct the answer.

$$\frac{5}{x-3}+\frac{10}{x^2-9}-\frac{15}{x+3}=\frac{5(x-3)+10-15(x-3)}{(x-3)(x+3)}$$
$$=\frac{5x-15+10-15x+45}{(x-3)(x+3)}$$
$$=\frac{-10x+40}{(x-3)(x+3)}$$
$$=\frac{-10(x-4)}{(x-3)(x+3)}$$
$$=\frac{10(x-4)}{(x+3)^2}$$

4. Hue runs an average speed of x m/s on level ground. In training, he runs three distances, 100 m, 200 m, and 400 m. If his speed reduces by 2 m/s with each new distance, how long in total does it take him to run all three distances?

Mark your work for *Lesson 5.2 Practice – II* using the solutions provided in *Appendix 2: Solutions*. Then, apply the rubric found at the beginning of the *Workbook*.


Unit 5: Rational Expressions and Equations

Lesson 5.2: Operations on Rational Expressions

Appendix

Practice Solutions – II

1. Add or subtract the rational expressions. Give the answer in simplest form, and identify any non-permissible values.

a. $\frac{7x-1}{4}+\frac{4x+3}{4}$

Because there are no variables in the denominator, there are no non-permissible values.

$\frac{7x-1}{4}+\frac{4x+3}{4}=\frac{7x-1+4x+3}{4}$

$=\frac{11x+2}{4}$

b. $\frac{3m^2}{m-1}-\frac{3m}{m-1}$

$\frac{3m^2}{m-1}-\frac{3m}{m-1}=\frac{3m^2-3m}{m-1}, m\neq 1$

$=\frac{3m(m-1)}{m-1}$

$=3m, m\neq 1$

c. $\frac{x^2}{x-3}+\frac{3x}{x-3}-\frac{18}{x-3}$

$\frac{x^2}{x-3}+\frac{3x}{x-3}-\frac{18}{x-3}=\frac{x^2+3x-18}{x-3}, x\neq 3$

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

$=x+6, x\neq 3$

2. Add or subtract the rational expressions. Give the answer in simplest form, and identify any non-permissible values.

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

NPVs: $x\neq -3, -\frac{1}{2}$

LCD $=(2x+1)(x+3)$

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

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

$=\frac{3x+9-2}{(2x+1)(x+3)}$

$=\frac{3x+7}{(2x+1)(x+3)}, x\neq -3, -\frac{1}{2}$

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Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.

Question Number	Got it!	Almost there…	Need to retry or ask for help.	Similar questions from *Pre-Calculus 11*
1				p. 336 #1ace
2				p. 336 #3, 5ace, 6bdf, 7ac
3				p. 336 #8
4				p. 337 #14

Please return to *Lesson 5.2* to continue your work in *Unit 5: Rational Expressions and Equations*.