

Pre-Calculus 11 - VLN

Chapter 4: Rationals

Lesson 2: Adding and Subtracting Rational Expressions

Question #1

Reference Q.15196

Add or subtract as indicated.

a. $\frac{5}{8} + \frac{3}{4}$

b. $\frac{4}{7} - \frac{2}{5}$

c. $\frac{7}{9} - \frac{1}{3} + 2$

d. $\frac{3}{2} - \frac{4}{3} + \frac{5}{4}$

Question #2

Reference Q.15197

Simplify.

a. $\frac{4x}{5} + \frac{3x}{10} - \frac{2x}{3}$

b. $\frac{c}{2} - \frac{c+2}{6}$

c. $\frac{a+2}{3} + \frac{a-3}{5}$

d. $\frac{t-2}{4} - \frac{t-3}{5}$

e. $\frac{2y-3}{4} - \frac{y+4}{7}$

f. $\frac{2x-3}{3} - \frac{5-2x}{9}$

Question #3

Reference Q.15198

Simplify.

a. $\frac{x}{4} + \frac{x+3}{6} + \frac{3x}{2}$

b. $\frac{4-2p}{3} + \frac{7-3p}{4} - \frac{p}{5}$

c. $\frac{6x+3}{5} - \frac{2x+1}{2} - \frac{x-3}{10}$

d. $2 - \frac{y-5}{5} + \frac{6y}{7}$

e. $\frac{3a+4}{12} + \frac{5-4a}{18} - 1$

f. $\frac{t}{7} - t - \frac{t-3}{3}$

Question #4

Reference Q.15204

Simplify. Express answers in lowest terms, and indicate nonpermissible values.

a. $\frac{2}{y} + \frac{3}{y} + \frac{4}{y}$

b. $\frac{1}{2x} + \frac{3}{2x} - \frac{5}{2x}$

c. $\frac{7y}{3y+8} - \frac{4y}{3y+8}$

d. $\frac{a+2}{a^2} - \frac{2-a}{a^2}$

e. $\frac{4b+1}{b+3} - \frac{2b-5}{3+b}$

f. $\frac{15x}{4(3x+5)} + \frac{25}{4(3x+5)}$

Question #5

Reference Q.15206

Simplify. Express answers in lowest terms, and state any restrictions on the variables.

a. $\frac{1}{4x} + \frac{1}{2}$

b. $\frac{1}{3a} - \frac{1}{4a}$

c. $\frac{1}{3t} + \frac{1}{4t} + \frac{1}{5t}$

d. $\frac{1}{2t} - \frac{2}{3t} - \frac{3}{4t}$

e. $\frac{6}{5x} + \frac{2}{3x}$

f. $\frac{7}{5p} - \frac{5}{7p}$

g. $\frac{2}{x} - \frac{3}{2x} + \frac{4}{3x} - \frac{5}{4x}$

h. $\frac{3}{x} + 1$

Question #6

Reference Q.15208

Simplify. Express answers in lowest terms, and state any restrictions on the variables.

a. $\frac{9}{2x} + \frac{1}{x^2}$

b. $\frac{3}{4a^2} - \frac{5}{3a}$

c. $\frac{8}{3b^2} + \frac{7}{b^3}$

d. $\frac{4}{3c^2} - \frac{5}{2c^3} + \frac{6}{c^4}$

Question #7

Reference Q.15210

Simplify. Express answers in lowest terms, and indicate nonpermissible values.

a. $\frac{1}{a+1} + \frac{1}{a-1}$

b. $\frac{2}{b+3} + \frac{3}{b+2}$

c. $\frac{5}{x+2} - \frac{2}{x+5}$

d. $\frac{4}{x-3} + \frac{6}{x-1}$

e. $\frac{3}{y+2} - \frac{1}{y-7}$

f. $\frac{5t}{2t+1} - \frac{3t}{4t+1}$

Question #8

Reference Q.15215

Simplify.

a. $\frac{x-5}{3} + \frac{4x}{x-2}$

b. $\frac{p-1}{p+2} + \frac{p+2}{p+3}$

c. $\frac{2x-1}{x+2} - \frac{x+2}{2x-1}$

d. $\frac{2}{2x-3} + \frac{3}{3x-2} + \frac{4}{4x-1}$

e. $\frac{2}{t} - \frac{t+3}{t+2} - \frac{t+4}{t+3}$

Question #9

Reference Q.15219

$\frac{a}{a+2} + \frac{2}{a+2}$, $a \neq -2$, is equal to

A. $\frac{2a}{a+2}$

B. $\frac{a^2}{a+2}$

C. 1

D. $a+2$

Question #10

Reference Q.15272

A simplified form of $\frac{3}{x-7} - \frac{5}{7-x}$, $x \neq 7$, is

- A. $\frac{8}{x-7}$
- B. $\frac{-2}{x-7}$
- C. $\frac{8}{7-x}$
- D. $\frac{-2}{7-x}$

Question #11

Reference Q.15221

A rectangle has length $\frac{1}{x}$ cm and width $\frac{1}{x+1}$ cm. The perimeter of the rectangle (in cm) is

- A. $\frac{4}{4x+2}$
- B. $\frac{4x+2}{x(x+1)}$
- C. $\frac{2x+1}{x(x+1)}$
- D. $\frac{1}{x(x+1)}$

Question #12

Reference Q.15211

Perform the indicated operations. Express final answers in lowest terms, and indicate the nonpermissible values.

- a. $\frac{1}{a} - \frac{1}{6a}$
- b. $\frac{2}{5x-15} + \frac{3}{2x-6}$
- c. $\frac{3}{4x+2} - \frac{1}{6x+3}$
- d. $\frac{1}{x^2-3x} - \frac{1}{x}$
- e. $\frac{y}{8-6y} + \frac{2y}{20-15y}$
- f. $\frac{4}{b} - \frac{1}{b^3-b}$

Question #13

Reference Q.15212

Perform the indicated operations. Express final answers in lowest terms, and indicate the nonpermissible values.

- a. $\frac{1}{(x-1)(x-2)} - \frac{1}{(x-2)(x-3)}$
- b. $\frac{4}{a(a+4)} + \frac{3}{a(a-3)}$
- c. $\frac{7}{(x-2)(x+5)} - \frac{8}{(x+5)(x-3)}$
- d. $\frac{2}{x(x-1)(x+1)} - \frac{1}{x(x-1)(x+2)}$

Question #14

Reference Q.15213

Simplify.

- a. $\frac{1}{x^2+2x+1} - \frac{1}{x+1}$
- b. $\frac{1}{y+2} - \frac{1}{y^2-4}$
- c. $\frac{2}{t^2-1} + \frac{1}{t+1}$

Question #15

Reference Q.15214

Perform the indicated operations. Express final answers in lowest terms, and indicate the nonpermissible values.

- a. $\frac{1}{x^2-x-2} - \frac{1}{x^2+4x+3}$
- b. $\frac{3}{t^2-7t+10} - \frac{2}{t^2-6t+8}$
- c. $\frac{2x}{x^2-3x-88} - \frac{2x-1}{x^2-10x-11}$
- d. $\frac{12y}{y^2-8y-20} - \frac{7y}{y^2-13y+30}$

Question #16

Reference Q.15216

Simplify, stating the nonpermissible values.

a. $\frac{2x+3}{5x-25} + \frac{x-4}{20-9x+x^2}$

b. $\frac{4x}{2x^2-5x-3} - \frac{1-2x}{9-x^2}$

Question #17

Reference Q.15236

Simplify, stating the restrictions on x .

a. $\frac{x^2-x-12}{x^2-8x+16} - \frac{x^2+5x-14}{x^2+10x+21}$

b. $\frac{2x^2-x-3}{2x^2+7x-15} + \frac{x^2+16x+63}{x^2+12x+35}$

c. $\frac{x^2-9}{x^2-x-12} - \frac{x^2-5x-14}{x^2-4x-21}$

d. $\frac{4x^2-4x-3}{4x^2-1} - \frac{x^2-4x-96}{x^2+4x-32}$

Question #18

Reference Q.15263

Simplify.

a. $\frac{2}{2a+3} + \frac{8}{4a^2+4a-3}$

b. $\frac{2}{6b^2-5b-4} - \frac{3}{9b^2-16}$

Question #19

Reference Q.15271

For all $x \neq \pm 6$, the sum $\frac{3}{x^2-36} + \frac{2}{x-6}$ is equal to

A. $\frac{5x+12}{x^2-36}$

B. $\frac{5x-12}{(x-6)^2}$

C. $\frac{2x-9}{x^2-36}$

D. $\frac{2x+15}{x^2-36}$

Question #20

Reference Q.15270

A helicopter left Calgary and travelled 135 km west into the Rocky Mountains at an average speed of $2x^2 + 3x$ km/h. The return journey was at an average speed of $4x^2 - 9$ km/h.

a. Write and simplify an expression for the total flying time in hours.

b. If the value of x is 6, determine the total flying time.

Question #21

Reference Q.15273

When simplified, the difference $\frac{5}{x^2-7x+12} - \frac{3}{x^2-x-12}$ can be written in the form $\frac{Ax+B}{(x-4)(x-3)(x+3)}$, where A and

B are integers.

The value of $B - A$ is ____.