

A2.A.16: Addition and Subtraction of Rationals 1: Perform arithmetic operations with rational expressions and rename to lowest terms

1 What is the sum of $(y - 5) + \frac{3}{y + 2}$?

- 1) $y - 5$
- 2) $\frac{y^2 - 7}{y + 2}$
- 3) $\frac{y - 2}{y + 2}$
- 4) $\frac{y^2 - 3y - 7}{y + 2}$

2 Expressed as a single fraction, what is

$$\frac{1}{x + 1} + \frac{1}{x}, \quad x \neq 0, -1?$$

- 1) $\frac{2x + 3}{x^2 + x}$
- 2) $\frac{2x + 1}{x^2 + x}$
- 3) $\frac{2}{2x + 1}$
- 4) $\frac{3}{x^2}$

3 The expression $\frac{x}{x - 1} + \frac{x}{x + 1}$ is equivalent to

- 1) 1
- 2) $\frac{2x}{x^2 - 1}$
- 3) -2
- 4) $\frac{2x^2}{x^2 - 1}$

4 The expression $\frac{6}{y - 5} - \frac{y + 5}{y^2 - 25}$ is equivalent to

- 1) $\frac{5}{y - 5}$
- 2) $\frac{5}{y + 5}$
- 3) $\frac{5y}{y - 5}$
- 4) $\frac{5y}{y + 5}$

5 Expressed as a single fraction, $\frac{3}{x - 1} - \frac{2}{x}$ is equivalent to

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

6 Expressed as a single fraction, $\frac{5}{x - 3} - \frac{1}{x}$ is equivalent to

- 1) $\frac{6x - 3}{x^2 - 3x}$
- 2) $\frac{4x + 3}{x^2 - 3x}$
- 3) $\frac{4x + 3}{2x - 3}$
- 4) $\frac{4}{x^2 - 3x}$

- 7 What is the sum of $\frac{3}{x-3}$ and $\frac{x}{3-x}$?
- 1
 - 1
 - $\frac{x+3}{x-3}$
 - 0
- 8 Expressed in simplest form, $\frac{3y}{2y-6} + \frac{9}{6-2y}$ is equivalent to
- $\frac{-6y^2 + 36y - 54}{(2y-6)(6-2y)}$
 - $\frac{3y-9}{2y-6}$
 - $\frac{3}{2}$
 - $-\frac{3}{2}$
- 9 For all values of b for which the expressions are defined, $\frac{b^2}{b-3} + \frac{9}{3-b}$ is equivalent to
- 1
 - $\frac{1}{3-b}$
 - $b-3$
 - $b+3$
- 10 What is $\frac{x}{x-1} - \frac{1}{2-2x}$ expressed as a single fraction?
- $\frac{x+1}{x-1}$
 - $\frac{2x-1}{2-2x}$
 - $\frac{2x+1}{2(x-1)}$
 - $\frac{2x-1}{2(x-1)}$
- 11 The expression $\frac{2}{\sin x} - \frac{5}{\sin x - 1}$ is equivalent to
- $\frac{-3}{\sin x(\sin x - 1)}$
 - $\frac{-3}{\sin x - 1}$
 - $\frac{-3\sin x - 2}{\sin x(\sin x - 1)}$
 - $\frac{-3\sin x - 2}{\sin x - 1}$
- 12 If the probability that an event will occur is $\frac{1}{x+1}$, then the probability that the event will *not* occur is
- $x+1$
 - $-\frac{1}{x+1}$
 - $\frac{x}{x+1}$
 - $-\frac{x}{x+1}$
- 13 If the probability that an event will *not* occur is $\frac{1}{x^2}$, then the probability that the event will occur is represented by
- 1
 - 0
 - x^2
 - $\frac{x^2-1}{x^2}$
- 14 If the probability that an event will occur is $\frac{x}{y}$, then the probability that the event will *not* occur is
- $-\frac{x}{y}$
 - $-\frac{y}{x}$
 - $\frac{1-x}{y}$
 - $\frac{y-x}{y}$

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Answer Section

1 ANS: 4 REF: 080505b

2 ANS: 2

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

REF: 069906a

3 ANS: 4 REF: 068421b

4 ANS: 1 REF: 080805b

5 ANS: 3 REF: 018734siii

6 ANS: 2 REF: 089919siii

7 ANS: 2 REF: 010315b

8 ANS: 3

$$\frac{3y}{2y-6} + \frac{9}{6-2y} = \frac{3y}{2y-6} - \frac{9}{2y-6} = \frac{3y-9}{2y-6} = \frac{3(y-3)}{2(y-3)} = \frac{3}{2}$$

REF: 011325a2

9 ANS: 4 REF: 088931siii

10 ANS: 3

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

REF: 011608a2

11 ANS: 3 REF: 060816b

12 ANS: 3 REF: 068522siii

13 ANS: 4 REF: 088523siii

14 ANS: 4 REF: 088619siii