A2.A.16: Perform arithmentic operations with rational expressions and rename to lowest terms

1. 060727b, P.I. A2.A.16

If $f(x)=\frac{3x^2-27}{18x+30}$ and $g(x)=\frac{x^2-7x+12}{3x^2-7x-20}$, find $f(x)\div g(x)$ for all values of x for which the expression is defined and express your answer in simplest form.

2. 010315b, P.I. A2.A.16

What is the sum of $\frac{3}{x-3}$ and $\frac{x}{3-x}$?

[A] 1 [B] 0 [C] -1 [D] $\frac{x+3}{x-3}$

3. 060929b, P.I. A2.A.16

Express in simplest form: $\frac{3x}{2x-6}+\frac{9}{6-2x}$

4. 080505b, P.I. A2.A.16

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

[A] $\frac{y^2-7}{y+2}$ [B] $\frac{y-2}{y+2}$

[C] $y-5$ [D] $\frac{y^2-3y-7}{y+2}$

5. 069906a, P.I. A2.A.16

Expressed as a single fraction, what is $\frac{1}{x+1}+\frac{1}{x}$, $x\neq 0,-1$?

[A] $\frac{3}{x^2}$ [B] $\frac{2x+3}{x^2+x}$

[C] $\frac{2x+1}{x^2+x}$ [D] $\frac{2}{2x+1}$

6. 060524b, P.I. A2.A.16

Express in simplest form: $\frac{1}{x}+\frac{1}{x+3}$

7. 080805b, P.I. A2.A.16

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

[A] $\frac{5}{y+5}$ [B] $\frac{5y}{y-5}$

[C] $\frac{5y}{y+5}$ [D] $\frac{5}{y-5}$

8. 080733b, P.I. A2.A.16

Express in simplest form:
$\frac{2x}{x^2-4}\div\frac{4}{x^2-4x-4}+\frac{12}{x^2-4}\cdot\frac{2-x}{3}$

9. 060816b, P.I. A2.A.16

The expression $\frac{2}{\sin x}-\frac{5}{\sin x-1}$ is equivalent to

[A] $\frac{-3\sin x-2}{\sin x(\sin x-1)}$ [B] $\frac{-3}{\sin x-1}$

[C] $\frac{-3}{\sin x(\sin x-1)}$ [D] $\frac{-3\sin x-2}{\sin x-1}$

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[4] $\frac{x+3}{2}$, and appropriate work is shown.
[3] Appropriate work is shown, but one computational, factoring, or simplification error is made.
[2] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.
or [2] Appropriate work is shown, but one conceptual error is made, such as failing to multiply by the reciprocal of g(x) or trying to solve for x.
[1] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.
or [1] $\frac{x+3}{2}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[1]

[2] C

[4] $\frac{3}{2}$, and appropriate work is shown.
[3] Appropriate work is shown, but one computational, factoring, or simplification error is made.
[2] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.
or [2] Appropriate work is shown, but one conceptual error is made, such as not factoring out -1.
or [2] Appropriate work is shown, but the answer is left as $\frac{3x-9}{2(x-3)}$ or as an equivalent expression.
[1] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.
or [1] Appropriate work is shown, but the answer is left as $\frac{3x}{2(x-3)}+\frac{9}{2(3-x)}$.
or [1] $\frac{3}{2}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[3]

[4] D

[5] C

[2] $\frac{2x+3}{x(x+3)}$ or $\frac{2x+3}{x^2+3x}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made or the answer is not simplified completely.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $\frac{2x+3}{x(x+3)}$ or $\frac{2x+3}{x^2+3x}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[6] incorrect procedure.

[7] D

[6] $\frac{x-4}{2}$, and appropriate work is shown.
[5] Appropriate work is shown, but one computational error is made.
[4] Appropriate work is shown, but two or more computational errors are made.
or [4] Appropriate work is shown, but -1 is not factored out.
[3] Appropriate work is shown, but one conceptual error is made, such as not following the correct order of operations.
[2] Appropriate work is shown, but one conceptual error and one computational error are made.
[1] Appropriate work is shown, but one conceptual error and two or more computational errors are made.
or [1] Appropriate work is shown, but two conceptual errors are made.
or [1] $\frac{x-4}{2}$, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[8] incorrect procedure.

[9] A