A2.A.18: Simplify complex fractional expressions

1. 010206b, P.I. A2.A.17

The expression $\dfrac{\frac{a}{b}-\frac{b}{a}}{\frac{1}{a}+\frac{1}{b}}$ is equivalent to

[A] $a-b$ [B] ab

[C] $\dfrac{a-b}{ab}$ [D] $a+b$

2. 010312b, P.I. A2.A.17

The fraction $\dfrac{\frac{x}{y}+x}{\frac{1}{y}+1}$ is equivalent to

[A] x [B] $\dfrac{x^2y}{1+y}$ [C] $2x$ [D] $\dfrac{2xy}{1+y}$

3. 080706b, P.I. A2.A.17

Which expression is equivalent to the complex fraction $\dfrac{\frac{1}{a}-a}{\frac{1}{a}+1}$?

[A] $1-a$ [B] $+1$

[C] -1 [D] $-(1-a)$

4. 060317b, P.I. A2.A.17

In simplest form, $\dfrac{\frac{1}{x^2}-\frac{1}{y^2}}{\frac{1}{y}+\frac{1}{x}}$ is equal to

[A] $y-x$ [B] $x-y$

[C] $\dfrac{x-y}{xy}$ [D] $\dfrac{y-x}{xy}$

5. 010706b, P.I. A2.A.17

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

[A] 2 [B] $\dfrac{3x+3}{x+3}$ [C] $\dfrac{x+1}{x+3}$ [D] $\dfrac{1}{3}$

6. 060713b, P.I. A2.A.17

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

[A] $-\dfrac{1}{3}$ [B] -3 [C] $\dfrac{1}{3}$ [D] 3

7. 080323b, P.I. A2.A.17

Express in simplest form: $\dfrac{\frac{x}{4}-\frac{4}{x}}{1-\frac{4}{x}}$

8. 060415b, P.I. A2.A.17

The expression $\dfrac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{x^2}-\frac{1}{y^2}}$ is equivalent to

[A] $\dfrac{y-x}{xy}$ [B] $y-x$

[C] $\dfrac{xy}{x-y}$ [D] $\dfrac{xy}{y-x}$

9. 080220b, P.I. A2.A.17
Which expression is equivalent to the complex fraction $\frac{\frac{x}{x+2}}{1-\frac{x}{x+2}}$?

[A] $\frac{2}{x}$ [B] $\frac{2x}{x+2}$ [C] $\frac{x}{2}$ [D] $\frac{2x}{x^2+4}$

10. 060919b, P.I. A2.A.17
The expression $\frac{1-\frac{x}{x-y}}{\frac{1}{x-y}}$ is equivalent to

[A] $x-y$ [B] $-y$ [C] y [D] $1-x$

11. 080513b, P.I. A2.A.17
When simplified, the complex fraction $\frac{1+\frac{1}{x}}{\frac{1}{x}-x}$, $x \neq 0$, is equivalent to

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

12. 080425b, P.I. A2.A.17
Express in simplest form: $\frac{\frac{1}{r}-\frac{1}{s}}{\frac{r^2}{s^2}-1}$

13. 010629b, P.I. A2.A.17
Simplify completely: $\frac{\frac{1-m}{m}}{m-\frac{1}{m}}$

14. 010826b, P.I. A2.A.17
Express in simplest form: $\frac{x-\frac{4}{x}}{\frac{2+x}{x}}$

15. 060823b, P.I. A2.A.17
Simplify: $\frac{\frac{x}{3}-\frac{3}{x}}{\frac{x-3}{x}}$

16. 060628b, P.I. A2.A.17
Simplify for all values of a for which the expression is defined: $\frac{1-\frac{2}{a}}{\frac{4}{a^2}-1}$

17. 080824b, P.I. A2.A.17
Express in simplest form: $\frac{1-\frac{1}{x}}{x-2+\frac{1}{x}}$

18. 060112b, P.I. A2.A.17
In a science experiment, when resistor A and resistor B are connected in a parallel circuit, the total resistance is $\frac{1}{\frac{1}{A}+\frac{1}{B}}$. This complex fraction is equivalent to

[A] 1 [B] $A+B$ [C] AB [D] $\frac{AB}{A+B}$

A2.A.18: Simplify complex fractional expressions

[1] A

[2] A

[3] A

[4] D

[5] C

[6] A

[2] $\frac{x+4}{4}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $\frac{x+4}{4}$, 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
[7] incorrect procedure.

[8] D

[9] C

[10] B

[11] D

[2] $-\frac{s}{r(r+s)}$ or $-\frac{s}{r^2+rs}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] Appropriate work is shown, but the answer is not expressed in simplest form.
or [1] $-\frac{s}{r(r+s)}$ or $-\frac{s}{r^2+rs}$, 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
[12] incorrect procedure.

[4] $\frac{-1}{m+1}$ or $\frac{1}{-m-1}$, and appropriate work is shown.
[3] Appropriate work is shown, but one computational or simplification error is made.
[2] Appropriate work is shown, but two or more computational or simplification errors are made.
or [2] Appropriate work is shown, but one conceptual error is made.
[1] Appropriate work is shown, but one conceptual error and one computational or simplification error are made.
or [1] $\frac{-1}{m+1}$ or $\frac{1}{-m-1}$, 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
[13] incorrect procedure.

[2] x - 2, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] x - 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.

[14]

[2] $\frac{x+3}{3}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $\frac{x+3}{3}$, 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.

[15]

[4] $\frac{-a}{2+a}$ or $\frac{a}{-2-a}$, and appropriate work is shown.
[3] Appropriate work is shown, but one computational or simplification error is made.
[2] Appropriate work is shown, but two or more computational or simplification errors are made.
or [2] Appropriate work is shown, but one conceptual error is made, such as not recognizing that -1 is a factor.
[1] Appropriate work is shown, but one conceptual error and one computational or simplification error are made.
or $\frac{-a}{2+a}$ or $\frac{a}{-2-a}$, 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.

[16]

[2] $\frac{1}{x-1}$, and appropriate work is shown.
[1] Appropriate work is shown, but one computational or factoring error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] $\frac{1}{x-1}$, 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.

[17]

[18] D