Name_____

Get your Rational off of my Rational!

Date_____

Simplify the following compound rational expressions by multiplying by a common denominator for ALL of the fractions.

1)

$$\dfrac{1 + \dfrac{1}{x}}{1 - \dfrac{1}{x}}$$

2)

$$\dfrac{\dfrac{1}{2} + \dfrac{3}{x}}{\dfrac{x+3}{2}}$$

Simplify the numerator and the denominator, then simplify the expression completely.

3)

$$\dfrac{x - \dfrac{1}{x}}{x + \dfrac{1}{x}}$$

4)

$$\dfrac{1 + \dfrac{x}{2}}{\dfrac{2}{x} - 3}$$

Use any method that you prefer to simplify the following compound rational expressions.

5)
$$\dfrac{4 + \dfrac{1}{x^2}}{3 - \dfrac{1}{x^2}}$$

6)
$$\dfrac{\dfrac{1}{x^2 \cdot y} + \dfrac{1}{y^2}}{\dfrac{1}{x^2} + \dfrac{1}{xy^2}}$$

7)
$$\dfrac{1 - \dfrac{1}{x - 1}}{1 + \dfrac{1}{x - 1}}$$

8)
$$\dfrac{1 - \dfrac{x}{x + 1}}{2 - \dfrac{x - 1}{x}}$$

Simplify each expression.

9) $\dfrac{\dfrac{6}{a^2} + \dfrac{4}{a^2}}{2}$

10) $\dfrac{3}{\dfrac{a+1}{36} - \dfrac{1}{12}}$

11) $\dfrac{\dfrac{16}{m-3} - \dfrac{1}{6}}{\dfrac{m-3}{36}}$

12) $\dfrac{\dfrac{x+2}{6} + \dfrac{x+2}{x}}{\dfrac{x+2}{x^2} + \dfrac{6}{x+2}}$

13) $\dfrac{\dfrac{u+1}{u-3}+\dfrac{2}{u-3}}{\dfrac{u-3}{u+1}-\dfrac{16}{u-3}}$

14) $\dfrac{\dfrac{1}{3}-\dfrac{x^2-2x}{9}}{\dfrac{x^2}{36}-\dfrac{2}{x-2}}$

15) $\dfrac{\dfrac{1}{6}-\dfrac{u}{u+2}}{\dfrac{1}{9}+\dfrac{u^2}{u+2}}$

16) $\dfrac{\dfrac{8}{3x+2}-\dfrac{4}{x+3}}{\dfrac{3x+2}{2}+\dfrac{x+3}{3x+2}}$

Answers to Get your Rational off of my Rational!

1) The dot next to the choice indicates that it is the answer.
2) The dot next to the choice indicates that it is the answer.
3) The dot next to the choice indicates that it is the answer.
4) The dot next to the choice indicates that it is the answer.
5) The dot next to the choice indicates that it is the answer.
6) The dot next to the choice indicates that it is the answer.
7) The dot next to the choice indicates that it is the answer.
8) The dot next to the choice indicates that it is the answer.

9) $\dfrac{5}{a^2}$

10) $\dfrac{108}{a-2}$

11) $\dfrac{594-6m}{m^2-6m+9}$

12) $\dfrac{x^4+10x^3+28x^2+24x}{42x^2+24x+24}$

13) $\dfrac{u^2+4u+3}{u^2-22u-7}$

14) $\dfrac{-4x-24+16x^2-4x^3}{x^3-2x^2-72}$

15) $\dfrac{-15u+6}{2u+4+18u^2}$

16) $\dfrac{-8x+32}{9x^3+41x^2+52x+30}$