Name: _____ Date: _____

4-1 SIMPLIFYING RATIONAL EXPRESSIONS
HOMEWORK

FLUENCY

1. Write each of the following ratios in simplest form.

   (a) $\dfrac{5x^8}{20x^2}$
   (b) $\dfrac{-12y^3}{8y^{12}}$
   (c) $\dfrac{6x^{10}y^2}{15x^4y^5}$
   (d) $\dfrac{24x^3y^7}{12x^6y^{10}}$

2. Which of the following is equivalent to the expression $\dfrac{4x^6y^4}{12x^2y^6}$?

   (1) $\dfrac{x^4}{3y^2}$
   (3) $\dfrac{3x^3}{y^2}$

   (2) $\dfrac{3y^2}{x^3}$
   (4) $\dfrac{x^3}{3y^2}$
   _____

3. Simplify each of the following rational expressions.

   (a) $\dfrac{x^2-25}{4x-20}$
   (b) $\dfrac{x^2+11x+24}{x^2-9}$
   (c) $\dfrac{4x^2-1}{5x-10x^2}$

   (d) $\dfrac{9x^2-4}{3x^2+4x-4}$
   (e) $\dfrac{7x^2-42x}{x^2+2x-48}$
   (f) $\dfrac{2x^2-3x-5}{25-4x^2}$

4. Which of the following is equivalent to the fraction $\dfrac{x^2-9x+18}{15x-5x^2}$?

(1) $\dfrac{x-3}{5x}$

(3) $\dfrac{6-x}{5x}$

(2) $\dfrac{x+6}{5x}$

(4) $\dfrac{-x-6}{5x}$

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5. The rational expression $\dfrac{2x^2+7x+6}{x^2-4}$ can be equivalently rewritten as

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

(3) $\dfrac{2x-3}{2-x}$

(2) $\dfrac{2x+1}{x-6}$

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

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6. Written in simplest form, the fraction $\dfrac{y^2-x^2}{5x-5y}$ is equal to

(1) $5y-5x$

(3) $\dfrac{-(x+y)}{5}$

(2) $\dfrac{y-x}{5}$

(4) $\dfrac{x-y}{5}$

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REASONING

7. When we simplify an algebraic fraction, we are producing equivalent expressions for *most* values of *x*. Consider the expressions $\dfrac{x^2-4}{2x-4}$ and $\dfrac{x+2}{2}$.

   (a) Show by simplifying the first expression that these two are equivalent.

   (b) Use your calculator to fill out the value for both of these expressions to show their equivalence.

   (c) Clearly these two expressions are *not* equivalent for an input value of $x=2$. Explain why.

x	$\dfrac{x^2-4}{2x-4}$	$\dfrac{x+2}{2}$
0		
1		
2		
3		
4		