Name_____

ALGEBRA II JOURNAL
Rational Functions

1. Rational expressions contain _____ in the _____ .

2. If a rational expression contains a quantity such as 2 – x in the denominator, you should reverse
   it to x – 2 by _____ and then moving
   _____ .

3. (a) An expression such as $x^2 - 16$ is called _____
      and is factored as _____ .
   (b) What catchphrase is used to help factor perfect cubes? _____
      (1) Factor: $x^3 + 216$ _____
      (2) Factor: $27x^3 - 64$ _____
   (c) Expressions with 4 terms are factored by _____ .
      (1) This method requires _____ steps.
      (2) Step 2 is only possible if Step 1 contains _____
      (3) An expression factored by this method should look like _____

4. When adding rational expressions by making a common denominator $\left[such\ as\ \frac{3}{x^2(x+5)^4} + \frac{7}{x^3(x+5)^2}\right]$,
   explain how to determine what power of each variable or quantity is needed in the common
   denominator? Explain in general, not using the example given. _____
   _____

5. (a) When simplifying a complex fraction, you must first combine the fractions in the numerator
      by making _____ and adding them together into _____ fraction.
   (b) Second, perform the same operations on the fractions in the denominator. These fractions
      (circle one) [do/do not] have to have the same denominator as the fractions in the numerator.
   (c) Next, use _____ - _____ - _____ to multiply by the _____ of the
      denominator..
   (d) _____ all expressions in the numerator and denominator and cancel.
   (e) Simplify the remaining expressions by *(circle one)* [multiplying all remaining expressions
      together/leaving all remaining expressions as quantities].

6. When a rational equation is _solved_ the result is _____ while the result from
   simplifying a rational equation is _____ .

7. You must _keep_ the denominators of a rational expression if it *(circle one)* [contains and = sign/does
   not contain an = sign], but you can multiply through a rational expression and _cancel_ all of the
   denominators if the problem *(circle one)* [contains and = sign/does not contain an = sign].

8. a) The solutions of a rational <u>equation</u> must be checked for _____ .

b) These values are found by _____ .

c) Solutions that result from solving the problem, but do not check are called _____

_____.

9. Write an example equation (*using actual numbers*) to cause each of the following transformations to occur to the graph of $f(x) = \frac{1}{x^2}$. *Your examples should not be identical to those of another student!*

a) Reflect over the *x*-axis and move right._____

b) Move left and down. _____

c) Stretch vertically and move up. _____

10. List the following rules, facts, or formulas.

a) Formula relating distance, rate, and time

b) Graphs of $f(x) = \frac{1}{x}$ and $f(x) = \frac{1}{x^2}$. Show a T-table for each.