

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: $x^3 - 64$ _____
 (2) Factor: $8x^3 + 125$ _____
 (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 [such as $\frac{3}{x^2(x+5)^4} + \frac{7}{x^3(x+5)^2}$], 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, multiply by the _____ of the fraction in 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 expression is *simplified* the result is usually _____ while the result from *solving* a rational equation is _____ .
7. 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], but you must *keep* the denominators if it (circle one) [contains and = sign/does not contain an = sign].

8. a) The solutions of a rational equation 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 left. _____
- b) Move right and up. _____
- c) Stretch vertically (pass through (1,a)) and move down. _____
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.