WeBWorK assignment number MPT_Practice_Rational_Funct_2011 is due : 09/14/2012 at 11:00pm PDT.

The following link
http://mathweb1.sandbox.csun.edu/mpt/
contains other important information about this course.

The primary purpose of WeBWorK is to let you know that you are getting the correct answer or to alert you if you are making some kind of mistake. Usually you can attempt a problem as many times as you want before the due date. However, if you are having trouble figuring out your error, you should consult the book, or ask a fellow student, one of the TA's or your professor for help. Don't spend a lot of time guessing – it's not very efficient or effective.

Give 4 or 5 significant digits for (floating point) numerical answers. For most problems when entering numerical answers, you can if you wish enter elementary expressions such as $2 \wedge 3$ instead of 8, $sin(3 * pi/2)$instead of -1, $e \wedge (ln(2))$ instead of 2, $(2+tan(3)) * (4-sin(5)) \wedge 6-7/8$ instead of 27620.3413, etc. Here's the **list of the functions** which WeBWorK understands.

You can use the Feedback button on each problem page to send e-mail to the professors.

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1. (1 pt) Let

$$f(x) = \frac{x+3}{3x-4}.$$

Compute the following values. If one is not defined, type *Undefined* .

$f(0) =$ _____

$f(-7) =$ _____

$f(4/3) =$ _____

Answer(s) submitted:

-
-
-

(incorrect)

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2. (1 pt) Evaluate the function $f(y) = \frac{4y+5}{2-3y}$ for $y = 2$ without using a calculator. Simplify your answer as much as possible.

$f(2) =$ _____ **help (fractions)**

Answer(s) submitted:

-

(incorrect)

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3. (1 pt) Consider the function

$$f(x) = \frac{x+1}{x^2-5x+6}$$

and evaluate
$f(x-1) =$ _____.

Answer(s) submitted:

-

(incorrect)

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4. (1 pt) Cancel common polynomial and integer factors. and fill in the blanks.
$\frac{x^2-3x+2}{x^2-6x+8} = (x-$ ___ $)\,/(x-$ ___ $)$
For this identity to hold, x must not equal ___.
Hint: If you have difficulties seeing how to factor the numerator and denominator set them to zero, solve the resulting equation, and deduce the appropriate linear factors from the solution. Then cancel the common factor in numerator and denominator.

Answer(s) submitted:

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-
-

(incorrect)

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5. (1 pt) Multiply and simplify your answer.

$$\frac{4y+18}{y^2-4} \cdot \frac{y+2}{2y^2+9y}$$

Answer: _____

Answer(s) submitted:

-

(incorrect)

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6. (1 pt) Simplify the rational expression.

$$\frac{x^3+x^2+5x+5}{x+1}$$

Answer: _____

Answer(s) submitted:

-

(incorrect)

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7. (1 pt) Multiply and simplify your answer.

$$x-2 \cdot \frac{x^2+2x-15}{x^2+x-6}$$

Answer: _____

Answer(s) submitted:

-

(incorrect)

8. (1 pt) Find the least common denominator (LCD) of the rational expressions:

$$\frac{3}{2xy} \text{ and } \frac{4}{x^2}$$

Answer: _____

Answer(s) submitted:

-

(incorrect)

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9. (1 pt) The key to manipulating **rational functions and expressions** is that they work exactly like **fractions**.

The rational function

$$r(x) = \frac{x+1}{x-1} + \frac{2x+3}{x-2}$$

can be written in standard form as

$r(x) =$ (_____)/(_____).

Answer(s) submitted:

-
-

(incorrect)

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10. (1 pt) Write the following expression

$$\frac{x+5}{x-6} + \frac{x+2}{x-1} - 1$$

in the standard form of a rational expression: _____

Answer(s) submitted:

-

(incorrect)

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11. (1 pt) Perform the indicated operation. Note that the denominators are different. Simplify the result, if possible.

$$\frac{5}{3x^2+3x} + \frac{3}{x^2-1}$$

Answer: _____

Answer(s) submitted:

-

(incorrect)

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13. (1 pt)

$\frac{7}{x+1} + \frac{3}{x+6} =$ (_____)/(_____).

$\frac{7}{x+1} - \frac{3}{x+6} =$ (_____)/(_____).

$\frac{7}{x+1} \times \frac{3}{x+6} =$ (_____)/(_____).

$\frac{7}{x+1} \div \frac{3}{x+6} =$ (_____)/(_____).

Hint: Rational expressions work just like fractions.

Answer(s) submitted:

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-
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-
-
-

(incorrect)

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14. (1 pt)

$\frac{1+\frac{1}{x}}{1-\frac{1}{x}} =$ ___ / ___.

(Enter your answer in such a form that the leading coefficient in the numerator equals 1.)

Hint: Multiply Numerator and Denominator with x.

Answer(s) submitted:

-
-

(incorrect)

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15. (1 pt)

$$\frac{\frac{1}{x+1} + \frac{1}{x+2}}{\frac{1}{x+2} + \frac{1}{x+3}} = (\ \_\_\_\_\_\ )/(\ \_\_\_\_\_\ ).$$

Hint: Work on the numerator and denominator separately and then divide the resulting rational expressions.

Answer(s) submitted:

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-

(incorrect)

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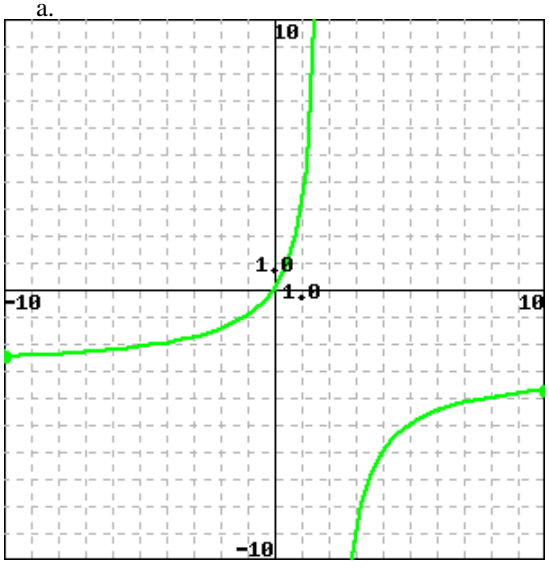
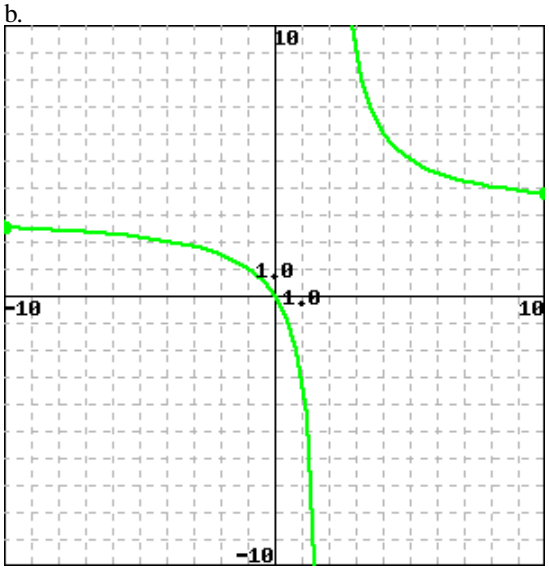
16. (1 pt) If $f(x) = \frac{15x}{5x-10}$

Which of the following is the correct graph of $f(x)$:

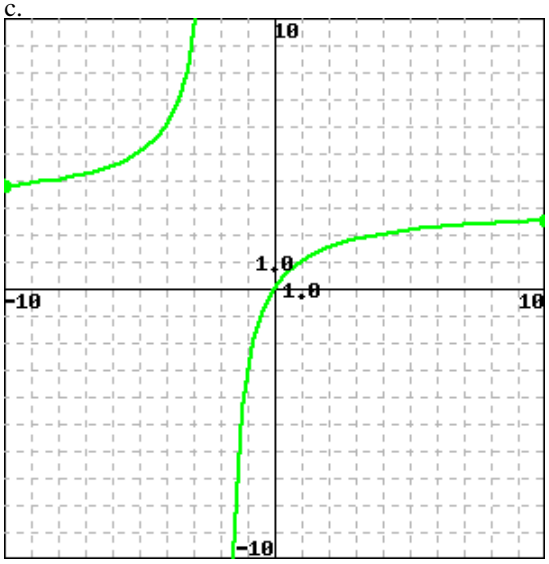
a.



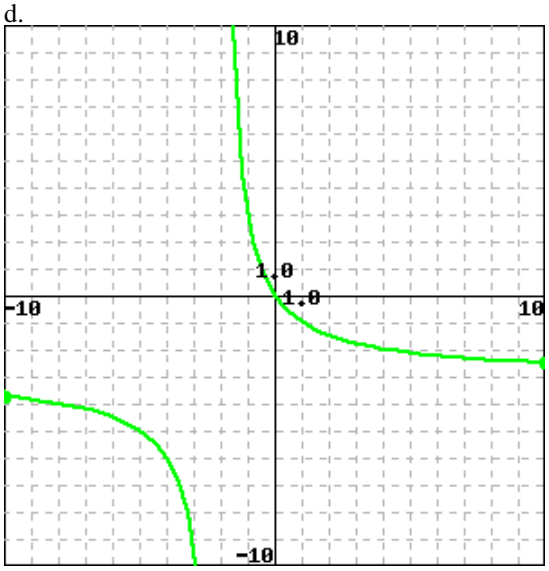
b.



c.



d.



Enter "a", "b", "c", or "d". _____

YOU HAVE ONLY ONE ATTEMPT

Answer(s) submitted:

-

(incorrect)

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17. (1 pt) For the function

$$f(x) = \frac{(7x-1)(x+6)}{(-x-3)(6x-1)},$$

What are the vertical asymptotes? Give a list of the x-values of the asymptotes separated by commas.

$x =$ _____

What is the horizontal asymptote?

$y =$_____

What are the x -intercepts? Give a list of the x-values of the x -intercepts separated by commas.

$x =$ _____

What is the y -intercept?

$y =$_____

Answer(s) submitted:

-
-
-
-

(incorrect)

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18. (1 pt) Find the slant asymptote of the function

$$f(x) = \frac{4x^2}{2x+7}$$

Slant asymptote $y =$ _____

Answer(s) submitted:

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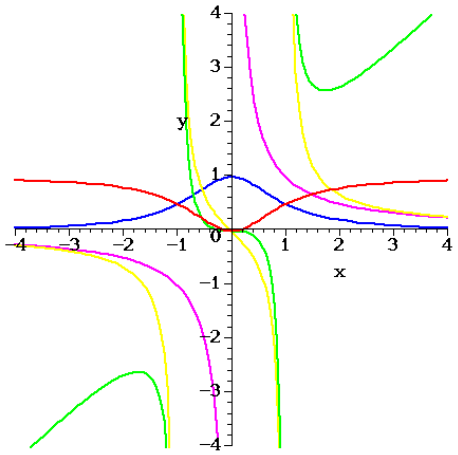
(incorrect)



19. (1 pt)

Match the graphs shown above with the functions listed below. Enter "r" for red, "g" for green, "p" for purple, "b" for blue, and "y" for yellow.

___: $f(x) = \frac{1}{x}$.
___: $f(x) = \frac{1}{x^2+1}$.
___: $f(x) = \frac{x}{x^2-1}$.
___: $f(x) = \frac{x^2}{x^2+1}$.
___: $f(x) = \frac{x^3}{x^2-1}$.

Hint: Again, look for various kinds of asymptotes.

Answer(s) submitted:

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•
•
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•

(incorrect)

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20. (1 pt) Let

$$f(x) = \frac{1}{x}.$$

Then
$f(x+1) = (\ \_\_\_\_\_\ )/(\ \_\_\_\_\_\ )$. and
$f(f(x)) = (\ \_\_\_\_\_\ )/(\ \_\_\_\_\_\ )$.
Hint: Take the definition of f and replace x with what ever you are evaluating f at.

Answer(s) submitted:

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(incorrect)

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21. (1 pt) In order for the identity

$$\frac{1}{x+1} + \frac{a}{x-1} = \frac{-2}{x^2-1}$$

to hold for all x, a must equal _____.
Hint: Simplify the left side of this equation and compare what you get with the right side.

Answer(s) submitted:

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(incorrect)

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22. (1 pt) Solve the equation $\frac{1}{x+1} - \frac{1}{x+2} = \frac{1}{6}$.

The solutions are $x_1 =$ _____ and $x_2 =$ _____
where $x_1 \le x_2$.

Answer(s) submitted:

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(incorrect)

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23. (1 pt) Solve the equation

$$\frac{x+1}{x-1} = \frac{-12}{x+3} + \frac{8}{x^2+2x-3}$$

Hint: There is only one non-extraneous root.

$x =$ _____

Answer(s) submitted:

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(incorrect)

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24. (1 pt) Solve for x:

$$\left(\frac{x+120}{x-15}\right)^2 - 212\left(\frac{x+120}{x-15}\right) + 11155 = 0$$

The smaller solution is _____.

The larger solution is _____.

Answer(s) submitted:

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•

(incorrect)

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25. (1 pt) Question 15:

Let $f(x) = \frac{6x-6}{3x+1}$. Find and simplify

$f^{-1}(x) =$ _____

Answer(s) submitted:

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(incorrect)