MATH 1113 PRACTICE TEST 1 ANSWERS FALL 2014

 1. Find all asymptotes of 

 First note that the function cannot be reduced.

Vertical asymptotes:

 

 The vertical asymptotes are *x* = 4 and *x* = ­–4

Horizontal asymptote: Find the ratio of the leading terms: 

 The horizontal asymptote is 

 2. Find the slant asymptote of the graph of 

 Divide using long division:

 

Note that there is no need to write the last step shown in blue!

+

+

+

–

−

−

 The slant asymptote is 

 3. In Question 1 determine what happens to the value of as 

 For values just larger than 4 both numerator and denominator are positive, so

 .

 4. Find the intercepts for 

 *y*-intercept: Let 

 For *x*-intercepts set the numerator equal to zero

 

1. Write in exponential form: ln 7 = 1.9459….

 

1. Write in logarithmic form: 

 

1. Write in logarithmic form: 

 

1. Without using a calculator evaluate  for 

 Let 

 Then 

To work this type of problem without a calculator you need to write each side with the same base. You need to recognize that .

 

1. Use a calculator to evaluate . Round your answer to two decimal places.

Using the LOG key on you calculator you get log 45 = 1.653212514

 

1. Solve for *x*: 

One of the properties of logs is that 

 

1. Use a calculator to evaluate . Round your answer to four decimal places.

Use the change of base formula: . In practice you use either the common log or the natural log because they are on your calculator.

 

1. Rewrite ln 36 in terms of ln 3 and ln 4

First write 36 as a product of 3’s and 4’s and then use the properties of logs

 

1. Approximate  given that  and 

First write 18 as a product of 2’s and 3’s and then use the properties of logs

 

1. Use the properties of logarithms to rewrite  as sum, difference and/or constant multiple of logarithms.

 

1. Use the properties of logarithms to rewrite  as sum, difference and/or constant multiple of logarithms.

 

1. Condense to the logarithm of a single quantity

 

1. Solve 

If you want to solve an equation with the variable in the exponent you first write it in the form and then take the log (or ln) of each side. First divide by 5

 

1. Solve 

Write in exponential form: 

The solution of is . However, the base of a log cannot be negative so

 *x* = 4

1. Solve . Find an exact solution and then evaluate the solution correct to three decimal places.

 

(This is the exact solution)

1. Solve . Find an exact solution and then evaluate the solution correct to three decimal places.

If you want to solve an equation with the variable in the exponent you first write it in the form and then take the log (or ln) of each side. First subtract 14 and then divide by 5.

 

1. Solve 

 

Whenever you solve an equation with a variable in the argument of a logarithm you must check answers.

 Check *x* = 5:  (This checks)

 Check *x* = ­–1: . This does not check because the log of a negative number is undefined.

 Answer: *x* = 5