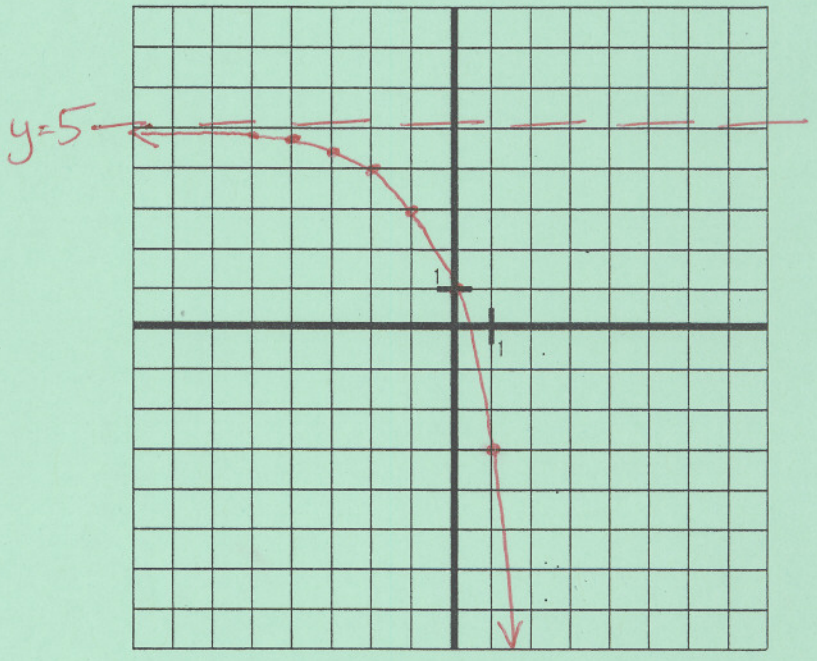
Math 114
Midterm 3 Part 2
Thu Mar 12, 2009

Name: _____

[7] Draw the graph of $f(x) = -2^{x+2} + 5$ by finding and plotting functions values, and connecting to get the shape of the graph. Show the functions values of at least 5 points on your graph. **LABEL ALL ASYMPTOTES CLEARLY.** **SCORE: ___ / 10 POINTS**

x	$f(x)$
-4	4.75
-3	4.5
-2	4
-1	3
0	1



[8] Find the value of $\log_7 14$ rounded to 4 decimal places. **SCORE: ___ / 3 POINTS**

$$\frac{\log 14}{\log 7} = \boxed{1.3562}$$

[9] Solve $3^{x-2} = 2^x$ algebraically. Round your answer to 2 decimal places. **SCORE: ___ / 10 POINTS**

$$(x-2)\log 3 = x\log 2$$
$$x\log 3 - 2\log 3 = x\log 2$$
$$x\log 3 - x\log 2 = 2\log 3$$
$$x(\log 3 - \log 2) = 2\log 3$$
$$x = \frac{2\log 3}{\log 3 - \log 2} = \boxed{5.42}$$

[10] The number of bacteria in a colony is given by $B(t) = 21(1.3)^t$. Determine when there were at least 153 bacteria using algebra. Round your answer to 2 decimal places. **SCORE: ___ / 8 POINTS**

$$153 = 21(1.3)^t$$
$$\frac{153}{21} = 1.3^t$$
$$\log\frac{153}{21} = t\log 1.3$$
$$t = \frac{\log\frac{153}{21}}{\log 1.3} = \boxed{7.57}$$