College Algebra-Math 100
Exam 3 – Summer 2005
July 18, 2005

Name:

Instructor:

Please show all work and simplify all answers completely

1. (10 pts) $x^2 - 3x + 6 > 2x$

   (a) Find critical values

   (b) solve for x

2. (10 pts) $\frac{x+2}{x-1} \leq \frac{x+5}{x-3}$

   (a) find critical values

   (b) solve for x

3. (5 pts) $f(x) = 2x + 1, g(x) = x^2 + 2$ find $(g \circ f)(x)$

4. (5 pts) $f(x) = \frac{3x+2}{x+1}$ find $f^{-1}(x)$

5. (5 pts) Find $\log_3(243)$

6. (5 pts) Convert $5^3 = 125$ to a logarithmic equation

7. (5 pts) Express as a single logarithm: $2\log_a(x) + 3\log_a(y) - 2\log_a(3z)$

8. (5 pts)Express in terms of $\log_a(x)$ and $\log_a(y)$: $\log_a((x^{-1}y^2)^3)$

9. (5 pts) Solve $3^{2x} = 5^{-x}$

10. (5 pts) Solve $\log_2(x+1) + \log_2(x+3) = 3$

11. (5 pts) Simplify $2e^{2ln(2x+1)}$

12. (5 pts) Find the doubling time for an initial investment of $5,000$ under continuous compounding if the annual interest rate is 2.8% (Hint: $A(t) = Pe^{rt}$)

13. (15 pts) $f(x) = 3^{x+1} - 5$

    (a) Suppose we know that $g(x) = 3^{x+1}$ has horizontal asymptote $y = 0$, find horizontal asymptote for f (Using your knowledge of shifts)

    (b) x-intercepts and y-intercepts

    (c) graph $f(x)$ (label all intercepts and asymptotes)

14. (15 pts) Given $f(x) = \frac{2x-8}{x^2-9}$

(a) find all asymptotes

(b) find x-intercepts and y-intercepts.

(c) graph $f(x)$(label all asymptotes and intercepts)