Math 1111 Final Exam
FALL 1998

Show all work for credit. Do all your work neatly on the paper provided. Write your name on each sheet you turn in. I will **not** grade any work done on the test sheet. When you are finished turn in all sheets including the test. Good Luck.

1. Simplify: $\dfrac{(r^{-3})^2 b^3}{r^2 b^2}$.

2. Multiply: $(x^2 - x + 1)(2x - 3)$

3. Perform the indicated operations and simplify: $\dfrac{x}{x^2 + 4x + 3} + \dfrac{x}{x + 3}$

4. Solve the following equations:

   (a) $\dfrac{2x + 1}{x - 2} = \dfrac{3}{4}$ (b) $x^2 + 4x = -3$ (c) $x^3 = x^2$

   (d) $x^3 - 3x^2 - x + 3 = 0$ (e) $\log_2(x) + \log_2(x + 2) = 1$ (f) $2^{x+3} = 5$

5. Solve the following inequalities:

   (a) $(x - 3)(x + 4)x \geq 0$ (b) $-1 \leq 2x - 5 \leq 2$

   (c) $|x - 7| > 2$

6. Solve the following system of equations: $\begin{aligned} x - y &= 9 \\ 2x + y &= 0 \end{aligned}$

7. Given $f(x) = x^2 - 1$ and $g(x) = 2x + 1$ find $f(g(x))$ and $g(f(x))$.

8. Write an equation of the line that passes through the point $(1, 2)$ which is parallel to the line $y = \frac{1}{3}x$.

9. Find domain, vertical asymptote, x-intercept, and sketch the graph of $f(x) = \log_7(x + 4)$.

10. Sketch the graphs of the following functions. Label all x intercepts.

    (a) $f(x) = x^4 - x^3$

    (b) $y = 2^x - 1$

    (c) $g(x) = 4 - x^2$ (also label vertex)

    (d) $y = 2x - 7$

11. The sum of three consecutive even integers is 924. Find the three integers.