

MATH 1111 Test 4  
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. Sketch the graph of  $f(x) = x^2 - 8x + 16$ . Identify the vertex and intercepts.
2. Find the quadratic function whose graph has vertex  $(4, -1)$  and passes through the point  $(2, 3)$ .
3. Sketch the graph of  $y = (x^2 - 1)(x^2 - 4)$ . Identify all x-intercepts.
4. Find all real zeros of  $f(x) = x^4 - x^3 - 20x^2$ .
5. Evaluate the following expressions. Problems with a (\*) should have **exact** solutions.
  - (a)  $625^{\frac{3}{4}}$  (\*)
  - (b)  $\log_7 15$
  - (c)  $\log\left(\frac{1}{1000}\right)$  (\*)
  - (d)  $\log_{15}(15^{167})$  (\*)
6. Sketch the graph of  $y = 2^{x-3} + 1$ .
7. What will the balance be after 10 years if you invest \$10,000 at an annual interest rate of 8% compounded monthly?
8. Find domain, vertical asymptote, x-intercept, and sketch the graph of  $h(x) = \log_4(x-3)$
9. Solve the following equations algebraically.
  - (a)  $2^{\frac{x}{3}} = \frac{1}{16}$
  - (b)  $\log(x) + \log(2-x) = 0$
  - (c)  $e^{x+2} = 15$
  - (d)  $\ln(x) + \ln(x-3) = 1$