Math 1031 Practice Exam 2, Fall 2004 Name: _____

Math 1031 Practice Exam 2

November 2004

There are nine questions, worth varying percentages as shown. Show your work in the space provided. You may not use your books or notes or a graphing calculator on this exam. You may use a regular scientific calculator.

1. A ladder ten feet long is placed againts a wall so that the height of the top of the ladder above the ground is two feet more than the distance of the foot of the ladder from the wall. How high is the top of the ladder above the ground?

2. Solve the following inequalities, specifying the region of real numbers which represents the solution:
   (a) $\dfrac{1}{x} > \dfrac{1}{x+1}$
   (b) $|2x - 1| \leq 5$.

3. Find all real solutions to the equation $x^4 - x^2 - 2 = 0$.

4. Solve the equation:
$$3 - \sqrt{2x - 4} = 0$$

5. Find the center and radius of the circle $2x^2 + 2y^2 + 12x + 16y = 0$.
   Answer: the center is at _____, and the radius is _____.

6. Determine whether or not the points $(1, 2)$, $(5, 3)$, $(6, -1)$, $(2, -2)$ are the vertices of a square.

7. Find the equation of the line which passes through the point $(3, 5)$ and is perpendicular to the line through $(1, -1)$ and $(4, -2)$.

8. A computer bought today for \$1,200 goes down in value according to a linear model so that after 4 years it is worth \$300.
   a) Write down an equation expressing the value V of the computer in terms of the time t, where t is expressed in years and $t = 0$ corresponds to the moment the computer is bought.
   b) According to this model, how much will the computer be worth 5 years after it is bought?

9. For each of the graphs (a) - (f) on page 107 of the book LHH say whether it has
   A: symmetry with respect to the x-axis,
   B: symmetry with respect to the y-axis,
   C: symmetry with respect to the origin, or
   D: none of these symmetries.
   Finally, match the graphs to the functions in questions 29 - 34.
   [On the actual exam, I would not refer to questions in the book. I do it here because it is hard for me to include graphics in this document, and it saves me work to refer to the book.]