Math 120
Autumn 1999
Quiz 1

Name: ............................................................

Instructions:

• You will have 30 minutes.
• Closed book, closed notes.
• You must SHOW YOUR WORK to receive credit.
• Give exact answers to all problems. For example, if the answer to a problem is $\sqrt{2}$ or $\frac{1}{3}$, do not write 1.414 or .33, etc.
• The point value of each problem is shown in parentheses to the left.

(2) 1. Solve the equation $\frac{x - 3}{x + 2} = \frac{1}{5}$.

(2) 2. Factor the polynomial $-2x^3 + 16x^2 + 40x$ into linear factors.

(2) 3. Find all numbers $t$ which satisfy the equation $3t^2 + 4t - 2 = 0$. 
4. Simplify the expression \( \frac{1}{2-x} - \frac{2}{3} \). Use only one fraction bar to express your answer.

5. Solve the equation \( T = 2\pi \sqrt{\frac{L}{180}} \) for \( L \).

6. Find the length \( \ell \) in the following right triangle.
7. At time $t = 0$ car A is located one mile north of an intersection and is moving southbound at 40 miles per hour. At the same time, car B passes through the intersection moving eastbound at 30 miles per hour.

The units on each coordinate axis are miles and time is measured in hours.

(2) (a) Where is car A located after 2 minutes?

(2) (b) Give the position of each car in terms of time $t$. Express your answers as ordered pairs.
(4) (c) When are the cars 2 miles apart? It’s okay to give a decimal approximation, but you need to show the work that goes into getting your answer.