U.C. MATH BOWL 2017
LEVEL II — Session 2

Instructions: Write your answers in the blue book provided. Remember that even correct answers without explanation may not receive much credit and that partially correct answers that show careful thinking and are well explained may receive many points.

Have Fun!

1. There is an imaginary island called the Island of Knights and Knaves. On this island, there are people called knights, who always tell the truth, and people called knaves, who always lie. The two types are indistinguishable by sight. On a vacation to this island, you meet two inhabitants: Bill and Bob. Bob says "We are both the same kind, either both knights or both knaves", but Bill says "We are both different kinds. One of us is a knave and the other is a knight" Who is the knight and who is the knave?

2. In the football game Saturday the home team only scored points by touchdowns (worth 7 points) and field goals (worth 3 points). What is the largest number of points that the team could not have scored?

3. Two sides of a triangle have lengths 2 and 3 and the third side has length L. What could L be if the triangle has only acute angles?

4. Determine the value of he product of all roots of the polynomial $3x^5 + 12x^4 - 7x^3 - 5x^2 + 6$ times the sum of these roots.

5. Sam and Terry rake a yard for 40 minutes, after which Lou joins them, and they finish 20 minutes later. If Lou had not helped, it would have taken them 50 more minutes to rake the yard. How long would it have taken Lou to rake the yard alone?