

## TMC – 2006 – MATH BOWL

| Round 3 | Questions  | Answers                            |
|---------|--|------------------------------------|
| 1.      | What is the remainder when $x^4 - 2$ is divided by $x + 2$ ?   | 14                                 |
| 2.      | Which fraction is larger, $\frac{1}{3}$ or $\frac{2}{7}$ ?   | $\frac{1}{3}$                      |
| 3.      | If person A can complete a task in 4 hours and if person B can complete the same task in 7 hours, how long would it take the two people working together to complete the task? | $\frac{28}{11}$ or $2\frac{6}{11}$ |
| 4.      | What is the coefficient of $x^2$ in $(x-2)^5$ ?  | -80                                |
| 5.      | What point is the center of the circle: $x^2 + 4x + y^2 = 3$ ?   | $(-2, 0)$                          |
| 6.      | What is the median of the first eleven natural numbers?  | 6                                  |
| 7.      | A quadratic polynomial in $x$ has leading coefficient of 1. If the sum of its roots is 1 and the product of its roots is -30, what is the polynomial?                          | $x^2 - x - 30$                     |
| 8.      | What is the $y$ -intercept of the line $6x - 2y = 2$ ?   | -1                                 |
| 9.      | A club has 29 members. If the club has 13 more girls than boys, how many girls are in the club?  | 21                                 |
| 10.     | What is the $x$ -coordinate of the point of intersection of $x + y = 4$ and $x - y = 6$ ?  | 5                                  |

### Tie Breakers

|    |  |             |
|----|--|-------------|
| 1. | What is $x$ if the logarithm of $x$ , base 3, is 4?  | 81          |
| 2. | An equilateral triangle is inscribed in a circle of radius 5. What is the side length of the triangle? | $5\sqrt{3}$ |