

2015 Qualifying Test Round One

1. Find the slope of the line whose equation is $2y - 3x = 5$. _____
2. What is the fourth digit to the right of the decimal point in the decimal expansion of π ? _____
3. The x -coordinate of the point where the graph of $xy = 8$ and $y = x^2$ intersect is _____
4. $\sin\left(2 \cos^{-1}\left(\frac{4}{5}\right)\right) =$ _____
5. Which platonic solid has sides shaped like pentagons?
a. dodecahedron b. icosahedron c. octahedron d. tetrahedron
6. What is the smallest degree possible for a polynomial with integer coefficients that has $5/2$ and $3 + 2i$ as roots ? _____
7. The million-dollar Millennium Problem that has been solved was named for
a. David Hilbert b. William Hodge c. Henri Poincaré d. Bernhard Riemann
8. Find the sum of the following finite sequence, the alternating sum of the first 2,014 positive integers: $1 - 2 + 3 - 4 + \dots + 2013 - 2014$. _____
9. How many odd numbers between 100 and 999 have three distinct digits? _____
10. What is the greatest common factor (greatest common divisor) of the 66th term and the 300th term of the Fibonacci sequence $(1, 1, 2, 3, 5, \dots)$? _____

Return completed test(s) to Mike Breen (email: paoffice@ams.org; fax: 401-331-3842; or mail: c/o American Mathematical Society; 201 Charles St.; Providence, RI 02904)

Thank you for participating.